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HYDROLOGIC STUDIES

U. S. DEPARTMENT OF AGRICULTURE
 CONSERVATION EXPERIMENT STATION
 GUTHRIE, OKLAHOMA

1931-38

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UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
Washington, D. C.
H. H. Bennett, Chief

HYDROLOGIC STUDIES

COMPILATION OF
RAINFALL AND RUN-OFF FROM THE WATERSHED
OF THE RED PLAINS
CONSERVATION EXPERIMENT STATION
GUTHRIE, OKLAHOMA

1931-38

by

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REPORT ON HYDROLOGIC INVESTIGATIONS ON SMALL WATERSHEDS
AT THE CONSERVATION EXPERIMENT STATION OF THE
SOIL CONSERVATION SERVICE, GUTHRIE, OKLAHOMA

I. The Experiment Station

The Red Plains Soil Conservation Experiment Station is located near Guthrie, Oklahoma, in the northeastern corner of the central part of the region. The original station, a 160-acre farm located about 4 1/2 miles south of Guthrie, was selected in the fall of 1928. Work on the station was cooperative between the Bureau of Chemistry and Soils and the Bureau of Agricultural Engineering of the United States Department of Agriculture, the Oklahoma Agricultural Experiment Station, Stillwater, Oklahoma, and the Guthrie Chamber of Commerce. During April, 1935, operation of the station was transferred from the Bureau of Chemistry and Soils and the Bureau of Agricultural Engineering to the Soil Conservation Service of the United States Department of Agriculture.

The original agreement governing the activities of the station between the United States Department of Agriculture, Oklahoma Agricultural Experiment Station and the Guthrie Chamber of Commerce, was replaced March 1, 1935, by a new project agreement between the Oklahoma Agricultural Experiment

Station and the Soil Conservation Service, covering soil and water conservatic research for crop and pasture lands in Oklahoma.

Acknowledgment is made to C. E. Ramser for his work in locating the watersheds and installing the measuring equipment on these watersheds. The early basic records were collected by H. S. Riesbol and later by W. D. Potter and the latter is responsible for directing the field WPA men in the compilation of this report. W. D. Potter and L. L. Harrold of the Washington Office, Hydrologic Division, prepared the instructions for compiling the data and reviewed these data before publication. W. D. Potter initiated the compilation work in the field.

II. Physical Characteristics of the Station

The Red Plains Soil Conservation Experiment Station consists of approximately 260 acres. Located four miles south and one-half mile east of the town of Ardmore, Oklahoma.

Topography is gently rolling to hilly, the average total relief being approximately 42 feet. The soil is principally fine sandy loam with Vernon and Kirkland soil types predominating. Practically all of the soils on the area are classified in the arid or semi-arid region of the United States.

III. Description and History of Each Watershed

Included in the experiments conducted at the Red Plains Soil Conservation Experiment Station is one, the object of which is to determine the effect of land use on surface run-off and soil loss from small watersheds and terraced fields. This report is concerned only with eleven watersheds individually described in the 1931-1932

Watershed No. 1, designated as Ravine A (Fig. 1) was established June 1, 1929. Hydrologic measurements were begun November 3, 1930, and formal records began January 1, 1931. No important changes have been made in boundary location or area of the drainage system since measurements were started. The Parshall flume at the outlet of this watershed is shown on Plates III and IV.

The area contains approximately 35 acres of land drained to a ditch through a natural depression. The general shape of the area is roughly rectangular with about 5 percent average land slope. Watershed boundaries are natural ridges and earth dykes. Included within the watershed boundary is the original farmstead on which are located the field office, laboratory, machine shed and shop buildings.

Ravine A watershed is a terraced, cultivated area planted to a three-year rotation of corn, soybeans and alfalfa.

cover of wheat and the oats followed by cowpeas plowed under as green manure. Dango replaced corn in the rotation from the crop year 1936 to date.

14.232 acres of the Ravine A watershed is devoted to a soil renewal study designated on the station map as Plots 1 to 12, inclusive, in Field B. This area lies between the Terraces 5B to 9B, inclusive, and has received treatments and land use as shown in Table 1.

Information regarding the terraces in this field is contained in the following table:

Table 2

Terrace	Length Feet	Grade 1"/100'	Spacing Feet	Area Acres
1B	550	4	2.5	0.57
2B	2536	0 to 4	3.9	5.91
3B	2856	0 to 6	3.45	5.67
4B	2885	3	1.5	5.53
5B	1937	0 to 4	3	3.10
6B	1719	0 to 1	3	3.37
7B	1544	1 to 2	3	2.74
8B	1300	0 to 2	3	2.55
9B	1125	0	3	2.12

Thirty-two acres of the watershed are terraced and cultivated, and the remaining 3 acres are comprised of road, drainage ditch and farmstead.

Watershed No. 2 was established by the U. S. Forest Service on September 16, 1930, and management began immediately. There have been only slight changes in boundaries to date.

The area is nearly rectangular with drainage through several natural high ridges along the outlet. The outlet is a small ditch. The average land slope is 5.13 percent.

The watershed consists of 3.25 acres of unterraced, cultivated land farmed to a two-year rotation of cotton and cowpeas, with a minor amount of alfalfa. The area has become very badly gullied.

Watershed No. 3, designated at 110-15A, contains four level terraces, 2E to 5E, inclusive, as shown in figure 3. Installation, as shown on Plate V, was completed and measurements began August 2, 1929. There have been no major changes in boundaries over area to date.

Although both run-off and soil loss measurements have been obtained, results from this watershed show a marked change in rate and volume of run-off from a series of small terraces. Until late in 1934, serious erosion losses were recorded, whereas the greater portion of the eroded material actually originated in the outlet ditch. This ditch was effectively stabilized in 1934 and by 1936 had begun to silt up to a slight extent. Therefore, indicated soil losses prior to 1934 are possibly larger and since 1934 are probably less than actual losses at the terrace ends.

The area is nearly rectangular with drainage through several natural depressions, high and low, to the outlet. The outlet is a small ditch. The average land slope is 5.13 percent.

The watershed consists of 5.25 acres of unterraced, cultivated land farmed to a two-year rotation of cotton and cowpeas, with a winter cover of alfalfa. The area has become very badly gullied.

Watershed No. 3, designated at 110-15A, contains four level terraces, 2E to 5E, inclusive, as shown in figure 3. Installation, as shown on Plate V, was completed and measurements began August 8, 1929. There have been no major changes in boundaries over area to date.

Although both run-off and soil loss measurements have been obtained, results from this area are not very reliable. A change in rate and volume of run-off occurred in 1934. The terraces. Until late in 1934, serious erosion losses were recorded, whereas the greater portion of the eroded material actually originated in the outlet ditch. This ditch was effectively stabilized in 1934 and by 1936 had begun to silt up to a slight extent. Therefore, indicated soil losses prior to 1934 are possibly larger and since 1934 are probably less than actual losses at the terrace ends.

The area is roughly trapizoidal in shape and drainage is accomplished from the terrace outlets through a protected outlet ditch. Earthen dykes form the boundaries.

The watershed contains 3.13 acres of terraced, cultivated land farmed to a two-year rotation of cotton and cowpeas. Winter protection is afforded by wheat cover.

The following table gives the terrace information:

Terrace	Length Feet	Grade 1"/100'	Spacing Feet	Area Acres
2E	460	0	2	0.860
3E	465	0	2.5	0.881
4E	492	0	2.5	0.727
5E	522	0	2	0.620

The average land slope is 3.42 percent.

Watershed No. 4, (fig. 4) is designated as Plot L. Hydrologic measurements were started January 1, 1930, following the completion of installations and the building of dykes August 7, 1929.

In shape, the watershed is roughly square with drainage by sheet flow to a small gulley where the run-off is collected and carried to the outlet. The land slope is about 4.80 percent. Earth dykes along natural topographic ridges form the boundaries of the area. Within the boundaries of this plot, there are also four 1/100 acre plots, the run-off of which does not contribute

toward the total for the watershed.

Plot L consists of 5.62 acres of native woods and grass. (See appendix for report of forest survey of this watershed.)

Watershed No. 5, (fig. 5) is designated as Plot J. This area of 5.28 acres was laid out and measurements started August 7, 1929. This watershed is roughly rectangular and drains through a number of small gullies. Boundaries are formed of small earth dykes along natural topographic ridges.

The area is seriously eroded and contains many small gullies. Cover on the inter-gullied area is a mixture of native grasses and weeds. No effort has been made to reclaim the gullies or to increase the cover other than natural succession. Protection has been afforded from fire, and there has been no grazing.

Watershed No. 6, designated as Terrace 2B, has a drainage area of 5.99 acres and is shown in figure 1. This terrace was built March 4, 1929, and measurements started November 4, 1930. The run-off measuring equipment is shown on Plate VI. No change in area or boundary has been made to date.

The watershed is the total drainage of terrace 2B, which is of variable grade, 0 to 4"/100', and has a vertical spacing of 3.99 feet. This terrace is 2536 feet long and drains 5.99 acres on an average land slope of 2.79 percent. Limiting boundaries are small earth dykes.

This terrace is a cultivated area farmed to a 3-year rotation of corn (Darso from 1936), oats and cotton with a winter cover of wheat and the oats followed by cowpeas plowed under as green manure.

Watershed No. 7 is designated as Terrace 3B, (fig. 1), and lies immediately below Terrace 2B (Watershed 6). This watershed contains 5.67 acres on an average land slope of 4.21 percent. The terrace is 2856 feet long with a variable grade of 0 to 6"/100', and an average vertical interval of 3.45 feet.

Land use is the same as that for Watershed 6, and the date of establishment was November 4, 1930. Plate VII shows the run-off measuring equipment and flow resulting from the storm of June 24, 1932.

Watershed No. 8 is designated as Terrace 3C (fig. 1). Measurements of run-off and soil loss from this terrace were started June 9, 1930.

The drainage area consists of 2.85 acres above Terrace 30, which is 1500 feet long with a constant grade of 6"/100' and vertical interval between terraces of 3.5 feet. Limiting boundaries are earth dykes. The average land slope is 4.33 percent.

Land use is the same as that for Watershed 6.

Watershed No. 9, designated as Terrace 5C (fig. 1) is exactly similar to Watershed 8 except that the grade of the terrace

is 2"/100', with 3.43' vertical spacing. The drainage area is 2.578 acres land of 4.72 percent slope. Terrace 5C was established August 7, 1929.

The land use for Terrace 5C was a rotation of cotton, oats and Darso; wheat cover crop followed the cotton, cowpeas in rows followed the oats.

Watershed No. 10, known as Terrace 6E (fig. 1), is on the same slope and lies adjacent to Watershed 3, previously described. This area was established April 26, 1929. Measuring equipment was installed August 2, 1932, and formal records were begun January 1, 1933.

The drainage area contains 1.20 acres of land, which has 4.85 percent average slope. The terrace channel is level and 648 feet in length, and 4.00 feet vertical spacing.

Land use is the same as that for Watershed No. 3.

Watershed No. 11, (fig. 6), is located on a portion of the East Farm and is designated as the Pasture Plot. The area was set up June 1, 1932, and completed August 2, 1932. Measurements began shortly after that date. Plate VIII shows the area before the equipment was installed.

Roughly, the area is triangular in shape with the base lying on the higher portion of the slope. Earth dykes form the boundaries and intercept the sheet flow of the run-off, conducting

it to the measuring equipment. The land slope is 5.65 percent, and is very uniform over the total area of 2.50 acres.

Land use for the period of record has been a very good cover of native grasses, principally little bluestem. Sprouts have been controlled by mowing. The area has been grazed only after the heavier rains and then only for short periods.

IV. Instrumentation

A. Rain gages - Standard and Recording. (See Table 3).

1. All recording rain gages used at this station are Friez; Fergusson type, weighing and recording rain and snow gages. These gages use recorder charts having a vertical scale of 1" equals approximately 0.66 inches of rainfall. The horizontal or time scale is approximately 63 minutes per inch of chart. This chart is for a drum travel of one complete rotation for each 12-hour period.
2. Dates of rain gage installation and designation numbers appear in Table 3. Recording rain gages were uniformly installed with respect to base and funnel height. At each location, a standard U. S. Weather Bureau pattern rain gage was also installed, the distance between the two gages at a rainfall station being twice the instrument height. A photograph of a typical installation is shown on Plate I.

Table 3

WATERSHED INSTRUMENTATION
RAIN GAGES

Project Guthrie, Oklahoma

Gage No. <u>4</u>	Type	Date of Instal- lation	Scales: 1" on Chart Equals		Distance to Nearest Obstacle and Height of Obstacle above Top of Raingage
			Time	Rainfall	
			Depth		
			Minutes	Inches	
3		2/16/37	63	0.66	500 ft. N. to grove of trees 18 ft. high
4		2/16/37	63	.66	No obstacles within 500 feet
5		2-1929 <u>1</u>	63	.66	400 feet NW to Oak Tree 21 feet high
"field B"	Field Weighing and Recording	12/30/36	63	.66	70 feet from scattered trees 20 feet high
	Gages - Fergusson Pattern	9-1929 <u>2</u>	63	.66	100 feet from scattered trees 25 ft. high
9		2/16/37	63	.66	No obstacles within 400 feet
12		2/18/37 <u>3</u>	63	.66	No obstacles within 1000 feet

¹Replaced with new gage July 15, 1936.

²Replaced with new gage February 25, 1936.

³Standard W.B. Pattern gage installed July, 1932.

⁴All gages supplemented by standard gages at same location.



Table 4

Portion (percent) of Each Watershed Served by the Indicated
Standard Rain Gages Effective January 1, 1937

Terrace or Watershed	Gage No. 1	Gage No. 2	Gage No. 3	Gage No. 4	Gage No. 5	Gage No. 6	Gage No. 7	Gage No. 8	Gage No. 9
1-B	100.00								
2-B	23.78				76.22				
3-B	40.93		13.85		45.22				
4-B	20.34		15.03	25.42	39.21				
1-C					71.36				28.64
2-C					30.72	30.13		5.93	33.22
3-C					6.51			34.84	58.65
4-C					7.43			54.75	37.82
5-C								62.95	37.05
6-C								67.18	32.82
1-F					100.00				
2-F					100.00				
3-F									100.00
Plot 13			100.00						
Plot J				65.31		34.69			
Plot L							100.00		
Plot 15A			33.34	66.66					
6-E Terrace			27.43	72.57					

Total volume of storm rainfall for each watershed prior to 1937 was taken from "Field B" (No. 5) gage, and that for storms subsequent to January 1, 1937, was computed from one or more standard gages on an allocated basis, as shown in Table 4.

B. Parshall Flumes - (See Tabulation Sheet No. 2)

1. Parshall improved type Venturi flumes were used to obtain all volume and rate measurements of run-off from the eleven watersheds described in this report. Pertinent information regarding these flumes concerning size, construction, dates of installation, etc., will be found in Table 5.

Measurements of time and stage were accomplished by use of Bristol Waterstage Recorders. These recorders carried charts, the time scale of which required twelve hours for each revolution. The smallest time division on the charts used was 5 minutes, while .02 ft. stage was the smallest division of head. The maximum stage provided for on the charts used was 1.5 feet for float type recorders and from 2 feet to 4 feet for the pressure type. A typical installation of a Float Type Bristol recorder is shown on Plate II.

2. Field checks of the following were made once each month:
 - a. Zero of recorder chart
 - b. Flume dimension
 - c. Flume alignment



WATERSHED INSTRUMENTATION

Flumes and Silt Samplers

Water- shed No.	Parshall Flume	Size	Materials	Type	Bristol Water-Stage Recorder		Scales: Smallest division equals	Ramser Silt Sampler /1: Capacity of silt box	Date of Completed instal- lation	Frequency of field checks		Flume Depth	
					Zero on Gage	Flume Dimen- sions				Settle- ment			
											Time Minutes		Gage height Feet
1	3	Concrete	Pressure	5	0.02		none	11/3/30	Once each month and after every rain causing runoff	4			
2	2	Galvan- ized iron	do	5	.02		1024	9/16/30	do		3		
3	1	Galvan- ized iron	float	5	.02		160	3/8/29	do		1.5 $\frac{1}{2}$		
4	1	Galvan- ized iron	do	5	.02		160	8/7/29	do		1.5 $\frac{1}{2}$		
5	2	Galvan- ized iron	Pressure	5	.02		none	8/7/29	do		2		
6	2	Galvan- ized iron	float	5	.02		256	11/4/30	do		1.5 $\frac{1}{2}$		
7	2	Galvan- ized iron	do	5	.02		256	11/4/30	do		1.5 $\frac{1}{2}$		
8	2	Galvan- ized iron	do	5	.02		256	6/9/30	do		1.5 $\frac{1}{2}$		
9	1	Galvan- ized iron	do	5	.02		160	8/7/29	do		1.5 $\frac{1}{2}$		
10	0.75	Wood	do	5	.02		96	8/2/32	do		1.5 $\frac{1}{2}$		
11	1	Galvan- ized iron	do	5	.02		160	8/2/32	do		1.5 $\frac{1}{2}$		

Old wooden silt boxes were replaced with boxes having reinforced concrete slab floor and 2 inch T & G sides. This work was completed November 22, 1933.

Maximum stage provided on charts of Bristol Float recorders was 1.5 feet.

C. Ramser Silt Sampler

1. Measurements of soil loss in run-off water from the terraces and larger areas are made with Ramser silt samplers. The run-off water flows through the Parshall flume, where an automatic waterstage recorder records the depth of flow and the time on a chart. From this continuous record of instantaneous stages, the total surface run-off for the storm is determined. The run-off water with its load of eroded material discharges from the flume into a Ramser silt sampler, which consists of a silt box, where the heavier particles settle out, and then flows over a rectangular weir at the end of the box into the outlet ditch. As it goes over the weir a sample of the run-off water is taken out through a divisor box into a storage tank. Samples are taken of the material in the storage tank and in the silt box, and the oven-dry soil content is determined in the laboratory by the dehydration method. The percentage of dry soil in the storage tank sample multiplied by the total quantity of run-off gives the quantity of dry soil that passes over the weir. The dry soil content of the silt box gives the quantity of dry soil caught in the box. The sum of these two determinations

is the total quantity of soil lost in the run-off from the area that drains through the flume.

V. Graph and Tabulation Sheets

All storms, regardless of whether or not surface run-off resulted, were tabulated on forms S.C.S. 345.

Certain storms were selected so as to include, as nearly as possible and practicable, all types of storms occurring within the period of record. For these selected storms, graph sheets were prepared showing hydrographs and mass curves of both rainfall and run-off.

Accumulated rainfall graphs were plotted so as to reproduce, as nearly as possible, the rainfall recorder charts. Rainfall depths at the break points of the recorder charts and rainfall intensities between such break points were tabulated and plotted rather than depths and intensities for any selected time interval.

Recording gage No. 5 (Field B Gage), the charts of which were reproduced, was selected because it was thought to provide a record most nearly representative of the precipitation on the small watersheds under consideration.

Up to January, 1936, Field B Gage (No. 5) was used exclusively in the determination of rate and duration of rainfall. Since this date, other recording rain gages have been installed;

however, intensity and duration of all storms with which this report is concerned were computed from rain gage No. 5.

Rate-time graphs of surface run-off were prepared from stage recorder charts. The stage at all break points on such charts, as well as at numerous intermediate points, was tabulated and converted into cubic feet per second by means of rating tables* corresponding to the size of Parshall flume used. Values for low heads were obtained by plotting a curve of head versus rates of flow for values tabulated in the rating table and extending such curve to include stages as low as 0.01 ft.

Cumulative run-off graphs were obtained from the rate-time graph by averaging the ordinates of the rate-time graph for short intervals and multiplying such average by the intervening time interval.

*Rating table used was that published in the "Data Book", 3rd edition, prepared by J. C. Stevens for Leopold, Volpel and Company.





Plate I. Typical rainfall measuring station showing standard gage (at left) and recording gage.



Plate II. Typical installation of float type Bristol recorder and Parshall improved Venturi flume.



Plate III. Watershed I (Ravine A) Parshall flume and water-stage recorder shelter.



Plate IV. Watershed I (Ravine A) - entrance to concrete Parshall flume - throat width of 3 feet and depth, 4 feet - October, 1931.



Plate V. Run-off measuring equipment at Watershed 3 (Plot 15A) showing Parshall flume and Ramser silt sampler, October, 1931.

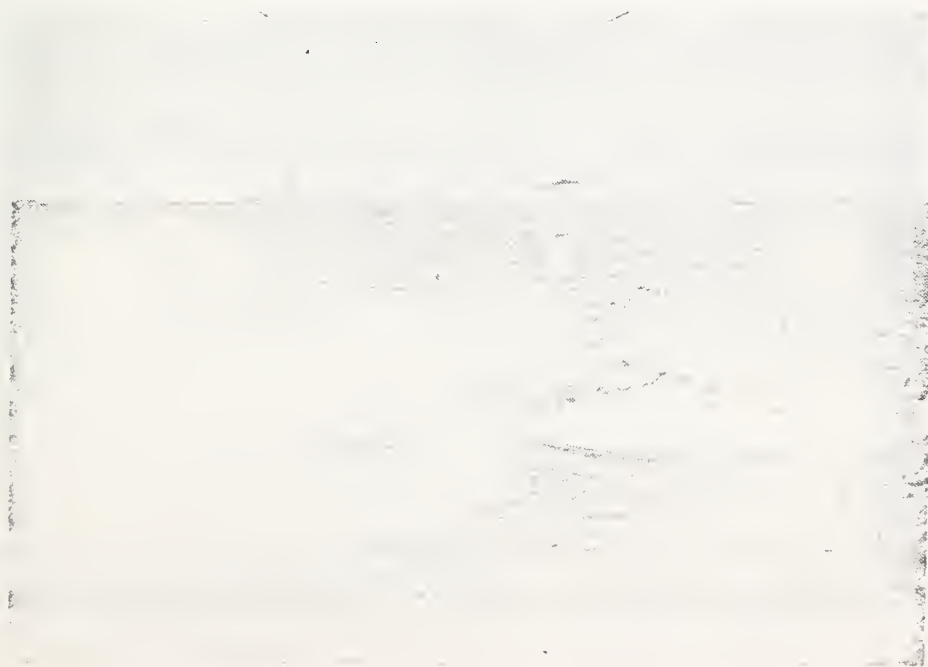


Plate VI. View of flume and Ramser silt sampler at Watershed 6 (Terrace 2B) - May, 1932.

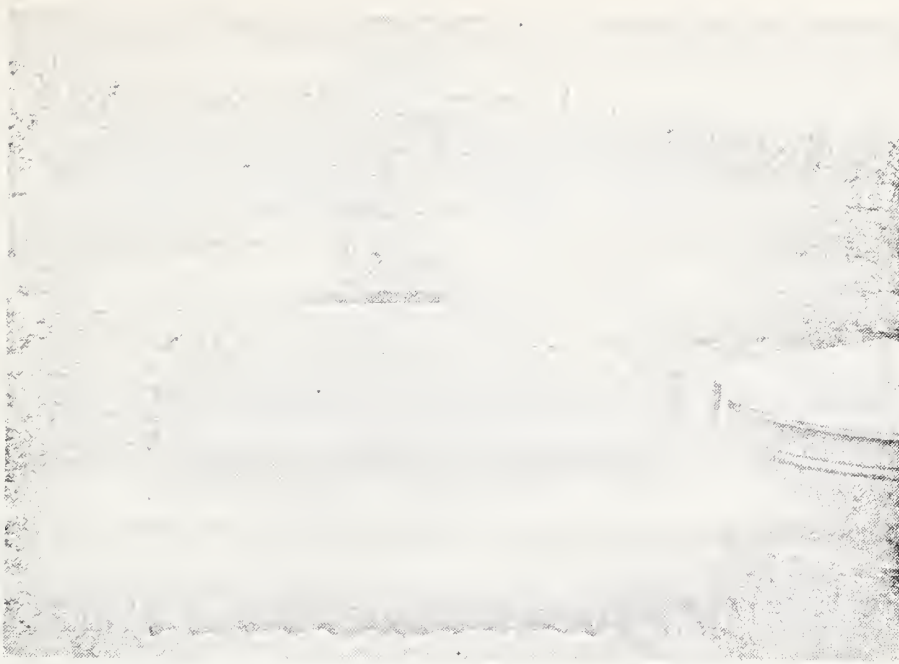


Plate VII. Run-off from Watershed 7 (Terrace 3B) during rain of June 24, 1932.

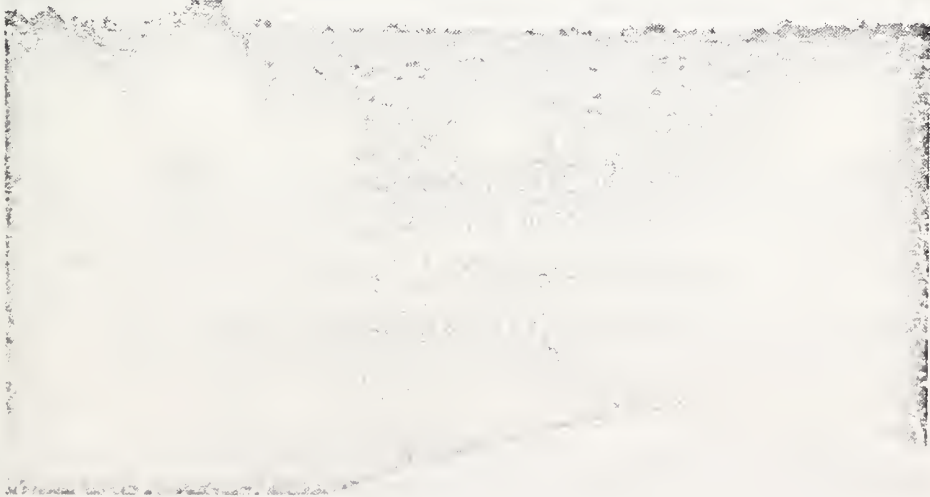


Plate VIII. Pasture area, Watershed 11, before measuring devices were installed June 7, 1932.

APPENDIX A

Report of Survey of Wooded Watershed¹
Red Plains Conservation Experiment Station
Guthrie, Oklahoma April 1939

T. B. McKeithen²

The wooded watershed, designated as Plot L, is located in the southeast portion of the Red Plains Conservation Experiment Station as shown in figure 1. The watershed (5.62 acres), extending from approximately 66 to 101 feet in elevation and roughly circular in shape, is situated near the top of a slope that averages 4.8 percent. The north and west sides are bound by pastured lands, the east side by a road, and the south side by woods. The area is fenced and protected from fire by fire lines.

The soils are Kirkland fine sandy loam which is fairly porous when in a virgin, undisturbed condition. The A horizon varies in depth from 9 to 14 inches. A sandstone outcrop covering about 50 square feet occurs in the northwest corner of the watershed.

A run-off measuring station, provided with automatic run-off recording and erosion measuring instruments, has been in operation since 1930. Records of soil loss from the watershed

¹The survey of the wooded watershed was carried out by the Forestry Division, Soil Conservation Service, in accordance with the specifications of W. U. Garstka, Hydrologic Division.

²Forestry Division.

were kept for the period 1930-38. The soil loss during this period was considered negligible and measurements were discontinued in 1938.

In this description the watershed has been divided into two types, as delineated on the map (figure 4). An area containing .560 acres, lying in the northern part of the watershed, is classed as grassland. Although there are a few scattered groups of trees on this area, grass is the predominant type of cover. A lack of moisture may have caused this condition since the type is located on the upper part of the slope. The boundary of this type was delineated with white paint to avoid confusion in future measurements. Plate 9 shows the character of this area.

The wooded portion of the watershed containing 5.060 acres has better moisture conditions and contains a good cover of stunted black jack and post oak. The trees grow in groups ranging up to one-half acre in size containing from 3 to 400 stems. The open areas between groups are well covered by grass. Plates 10, 11, and 12 show conditions within this portion.

Inventory.

As this was the first survey of the forest vegetation in the watershed, a 100-percent inventory was made of all trees six-tenths of an inch and over in diameter breast height (D.B.H.), and a stand table (table 6) prepared.



TABLE 6

Forested Watershed Stand Table, Area 5.62 Acres

TREES BY SPECIES AND DIAMETER CLASSES

Red Plains Conservation Experiment Station Guthrie, Oklahoma Plot L							
				McKeithen and Scheihing April 1939			
DBH	Black Jack Oak	Post Oak Hackberry	Chittim Wood	Dead	Total	Percent	
1	146	270	5	14	440	19.4	
2	123	189	1	43	356	15.7	
3	137	135		12	284	12.5	
4	217	132		10	359	15.8	
5	186	163		3	352	15.5	
6	167	124		5	296	13.1	
7	50	49		1	100	4.4	
8	21	25			46	2.0	
9	6	9			15	.8	
10	5	3			8	.4	
11	5	1			6	.3	
12	3				3	.1	
Totals	1066	1100	6	88	2265		
Percent	47.1	48.6	.3	3.8		100.0	

Limited time, one week having been allotted for the work, prevented a complete growth study of the area. A few trees were studied superficially and the growth rate was found to be extremely slow. It was impossible to distinguish annual growth rings on some of the trees. It is estimated that growth would average below one percent.



Management History.

Ten trees were cut in the northeast corner of the watershed some few years before the initiation of hydrologic measurements. No other cuttings have ever been made according to all available records.

The area has not been grazed since the establishment of the experiment station in 1930. No records previous to that date are available but indications are that the area had not been grazed for several years prior to 1930.

According to all records and indications, fire has not burned in the area during the past 20 years. No basal scars are evident even on the older trees.

No part of the watershed has ever been in cultivation. There are four 1/100-acre plots located within the watershed. One of the plots, planted with a clean-tilled crop, is unprotected during most of the year. The trees have been removed from around two of the plots for a distance of approximately 10 feet. One of the wooded plots is burned annually. Each of the plots have individual "silt" traps and run-off measuring stations. It is doubtful if these plots have any influence on the measurements of run-off from the watershed.

Woodland Description.

This woodland is typical of the black jack - post oak



type of the low rainfall area of the cross timbers section. The trees are stunted in character as none of them exceed 12 inches in D.B.H. and rarely reach 35 feet in height. The average D.B.H. of the trees within the watershed is about 4 inches and the average height less than 20 feet. Soil moisture appears to be the limiting factor in growth as the diameter and height of trees increase on the lower part of the watershed.

The stand is uneven-aged in character and composed of rather dense clumps of trees. The clumps or groups of trees occupy areas varying up to one-half acre in size. Most of them are approximately 1/100-acre in size.

The open spaces between groups of trees are well covered with various grasses. The following, listed in decreasing order of prevalence, were found: Prairie beardgrass, Prairie three-awn, Blue grama, Buffalo grass, Bluejoint turkeyfoot, Indian grass, and Switch grass. There are also traces of asters, ragweed, sorrel, rockweed, and *Lespedeza virginica*. The dead clumps of grass form an excellent protective cover to the soil even during winter and early spring.

There is very little reproduction in the watershed. Red cedar is fairly well scattered over the area and shows promise of becoming an important species in the future. Reproduction of other species is retarded by rabbits gnawing the base and biting

the tops of seedlings. Evidences of sparse reproduction of Hackberry and Elm were found.

The entire stand of older trees is apparently of coppice origin. This may account for the group-like arrangement of the trees. It is believed that root sprouts would become established in the open spots if moisture conditions were more favorable and rabbit damage less prevalent.

Based upon 254 one-foot-square plots, only 3.54 percent of the entire watershed can be classed as bare. There is a small sandstone rock outcrop in the northwest corner of the watershed. Bare areas are usually small spots underneath the crowns of trees or where rabbits have removed the debris. Of the 96.46 percent of the watershed area not bare, 55.9 percent is covered with leaves and litter and 44.1 percent with grass.

Wind sweep was noticed under some of the clumps of trees. A good layer of humus has formed where the leaves and litter have remained undisturbed for several years. The depth of the organic layer varies, attaining a maximum depth of 2 inches.

Information concerning the wooded watershed is given in the following table:

TABLE 7

Summary of Forest Inventory, Plot L
April 1939 Guthrie, Oklahoma

Age of stand (approx.)	65 years	Average basal area per acre	41.23 sq. ft.
Average height of dominant tree	22 feet	Soil Surface condition	
			<u>percent</u>
		Bare	3.54
Average crown length	18 feet	Not bare	96.46
Number of trees per acre	403	Ground Cover	<u>percent</u>
		Litter and leaves	55.9
		Grass and herbs	44.1
Average spacing	10.5 feet		

It is the opinion of the superintendent of the experiment station and his staff that the area at present affords approximately the maximum amount of protection to the site considering all factors involved. It is believed that the mixed cover offers better protection than either a grass or tree cover individually. It is doubtful if the effectiveness of the cover could be materially improved. Eliminating rabbit damage would increase the amount of tree cover at the expense of the grass, but it is doubtful if this would improve the effectiveness of the cover or would be desirable in this section of the state. Rainfall, surface run-off, and soil loss data for the watershed are summarized in table 8.

TABLE 8

RAINFALL, RUN-OFF, AND SOIL LOSS FROM WOODED WATERSHED

PLOT I

Red Plains Conservation Experiment Station

Guthrie, Oklahoma

Area - 5.620 acres Average slope - 4.8 percent		Hydrologic Records begun 1930		Soil - Kirkland fine sandy loam	
<u>Rainfall</u>		<u>Surface Run-off</u>		<u>Soil loss in Run-off</u>	
<u>Year</u>	<u>Inches</u>	<u>Amount</u>		<u>Percentage of total rainfall</u>	<u>Tons per acre</u>
		<u>Inches</u>	<u>Percent</u>		
1931	27.31	0.14	0.50		0.03
1932	36.20	0.72	2.00		0.18
1933	30.37	0.24	0.80		0.06
1934	34.10	2.03	5.80		0.38
1935	30.40	1.10	3.60		4.27
1936	21.52	.013	0.06		.0004
1937	25.18	Trace	-		Trace
1938	33.12	.05	0.15		.004



RED PLAINS CONSERVATION EXPERIMENT STATION
GUTHRIE, OKLAHOMA
WOODED WATERSHED



PLATE IX

View showing the sparse growth of trees and the luxuriant growth of grass in the grassland portion of the wooded watershed as seen from camera station #4. September 27, 1939.



PLATE X

A view of the water channel approximately seventy feet above the gaging station. Camera position near east bank of channel. September 27, 1939.



RED PLAINS CONSERVATION EXPERIMENT STATION
GUTHRIE, OKLAHOMA
WOODED WATERSHED



PLATE XI

Dense stand of smaller sized trees in the lower portion of the wooded watershed, as seen from camera station #2. September 27, 1939.

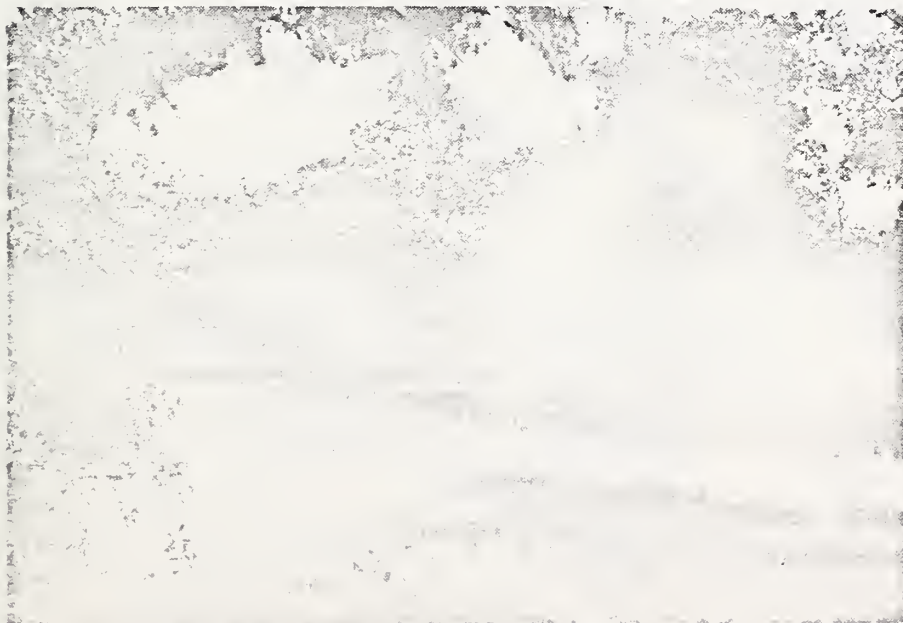


PLATE XII

View from camera station #3 showing the sparse growth of trees and the luxuriant growth of grass in the upper portion of the wooded watershed. September 27, 1939.

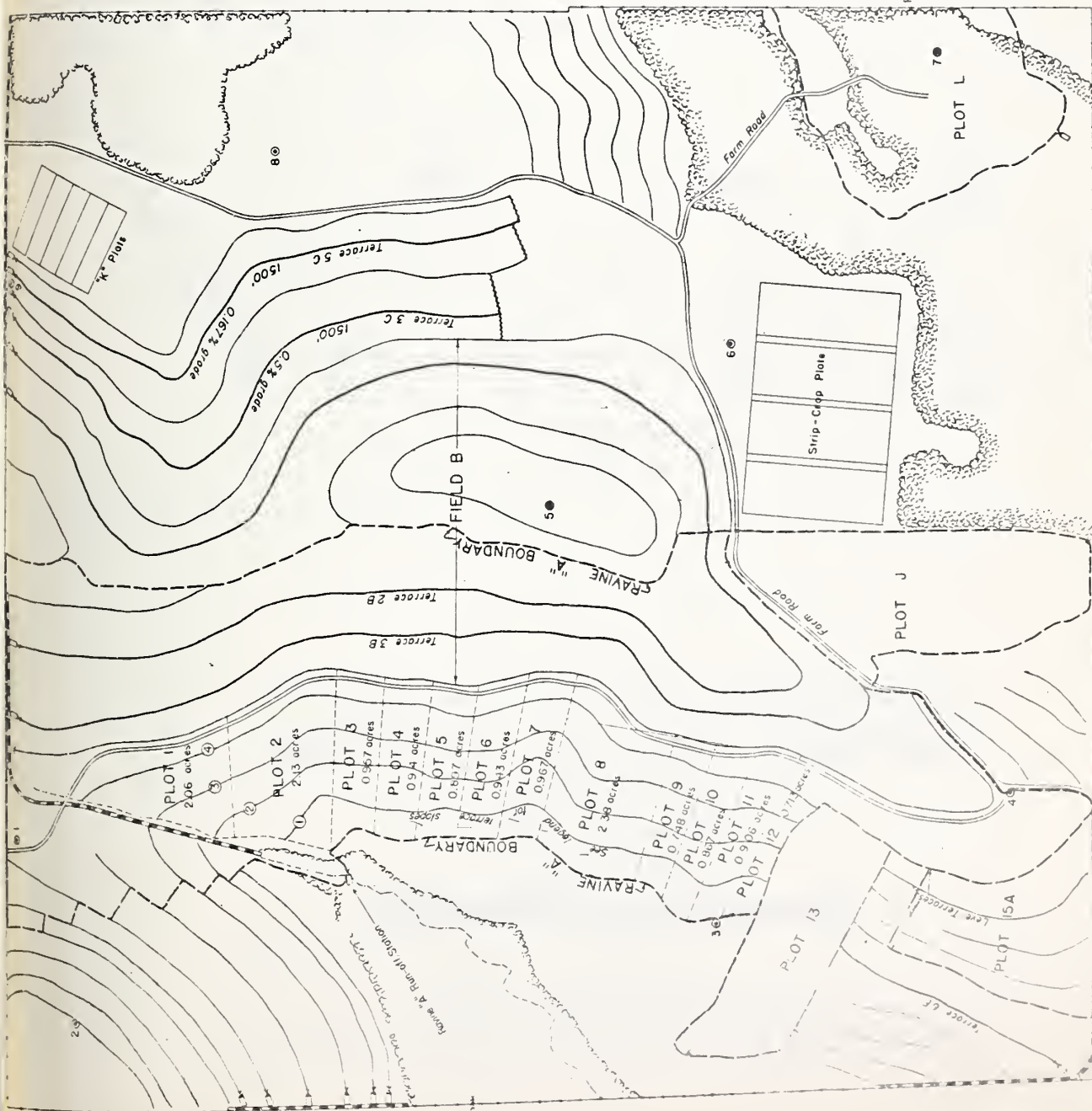
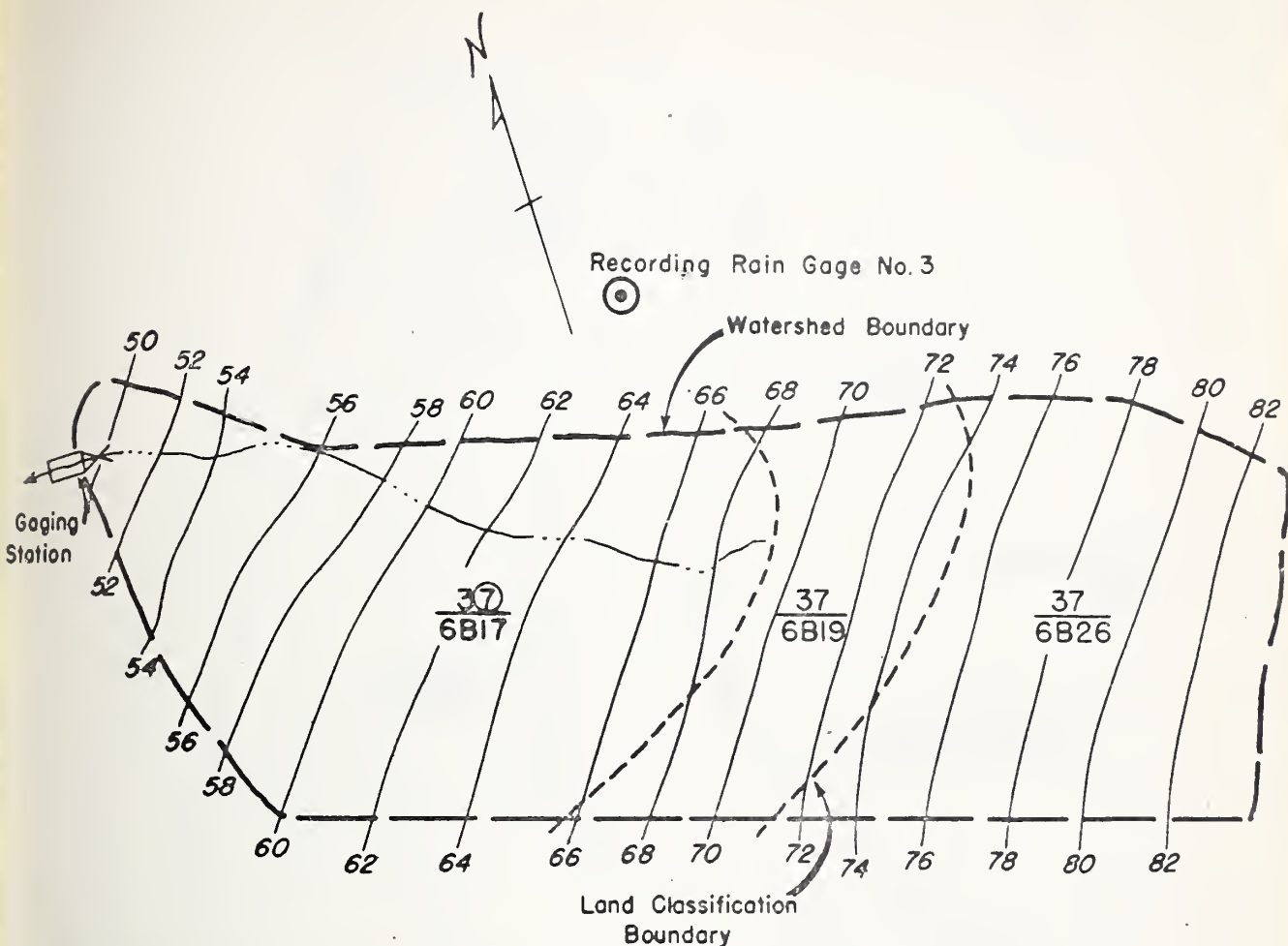
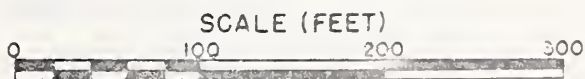


Fig. 1. Map of Hed Plains Conservation Experiment Station, Guthrie, Oklahoma, showing locations of small watersheds and run-off study plots



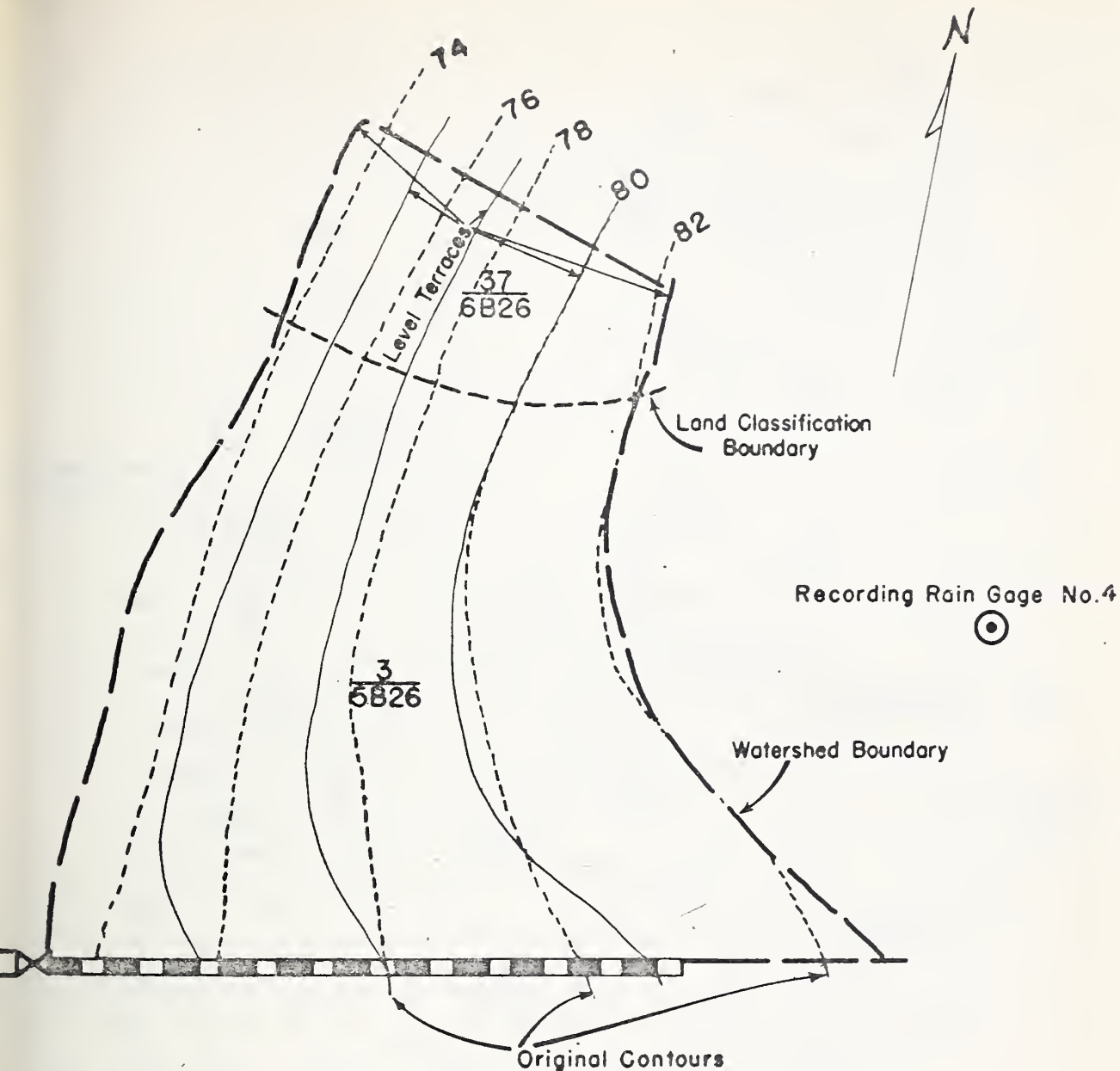


Plot 13
 RED PLAINS SOIL CONSERVATION EXPERIMENT STATION
 UNTERRACED CULTIVATED WATERSHED
 Guthrie, Oklahoma
 AREA: 3.21 ACRES



$\frac{37}{6826}$ = Erosion Class
 % Slope - Slope Group - Soil

⑦ - indicates gullies cannot be crossed with farming implements.
 See pages 39-40 for legend



Plot 15A

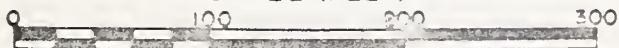
RED PLAINS SOIL CONSERVATION EXPERIMENT STATION

TERRACED CULTIVATED WATERSHED

Guthrie, Oklahoma

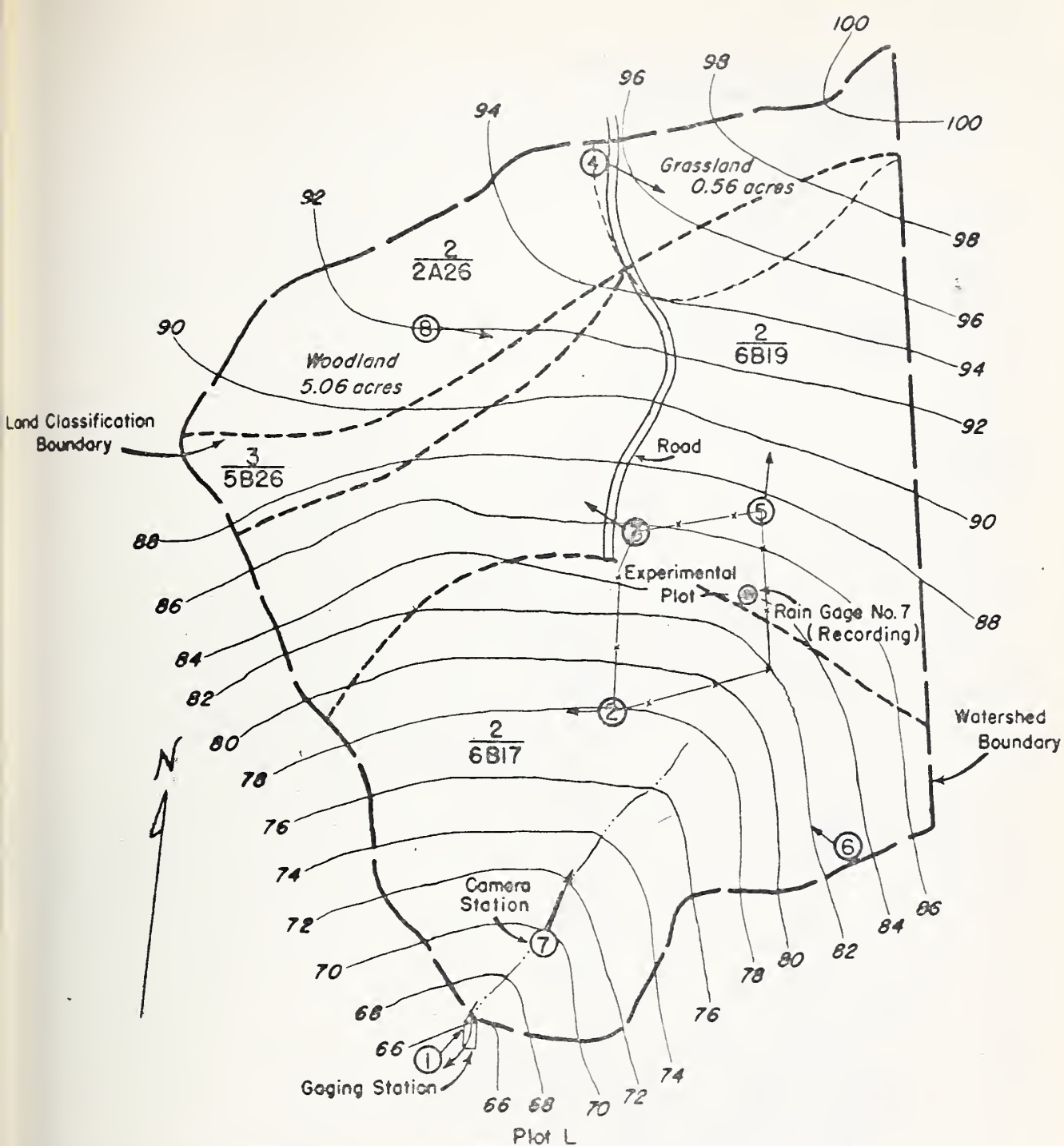
AREA: 3.13 ACRES

SCALE (FEET)



$$\frac{3}{5826} = \frac{\text{Erosion Class}}{\% \text{ Slope} - \text{Slope Group} - \text{Soil}}$$
 See pages 39-40 for legend



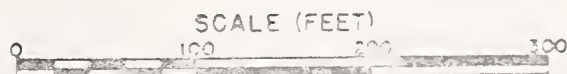


RED PLAINS SOIL CONSERVATION EXPERIMENT STATION

WOODED WATERSHED

Guthrie, Oklahoma

AREA: 5.62 ACRES



$$\frac{3}{5B26} = \frac{\text{Erosion Class}}{\% \text{ Slope} - \text{Slope Group} - \text{Soil}}$$

See pages 39-40 for legend

400' to Field "B" Recording
Rain Gage No. 5



Land Classification
Boundary

Watershed
Boundary

Farm Road

$\frac{3}{5B26}$

$\frac{4(8)}{5B26}$

$\frac{4(7)}{6B19}$

$\frac{4(7)}{6B-17}$

Plot J

RED PLAINS SOIL CONSERVATION EXPERIMENT STATION

NATIVE GRASS WATERSHED (Gullied)

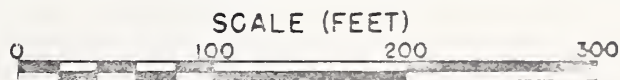
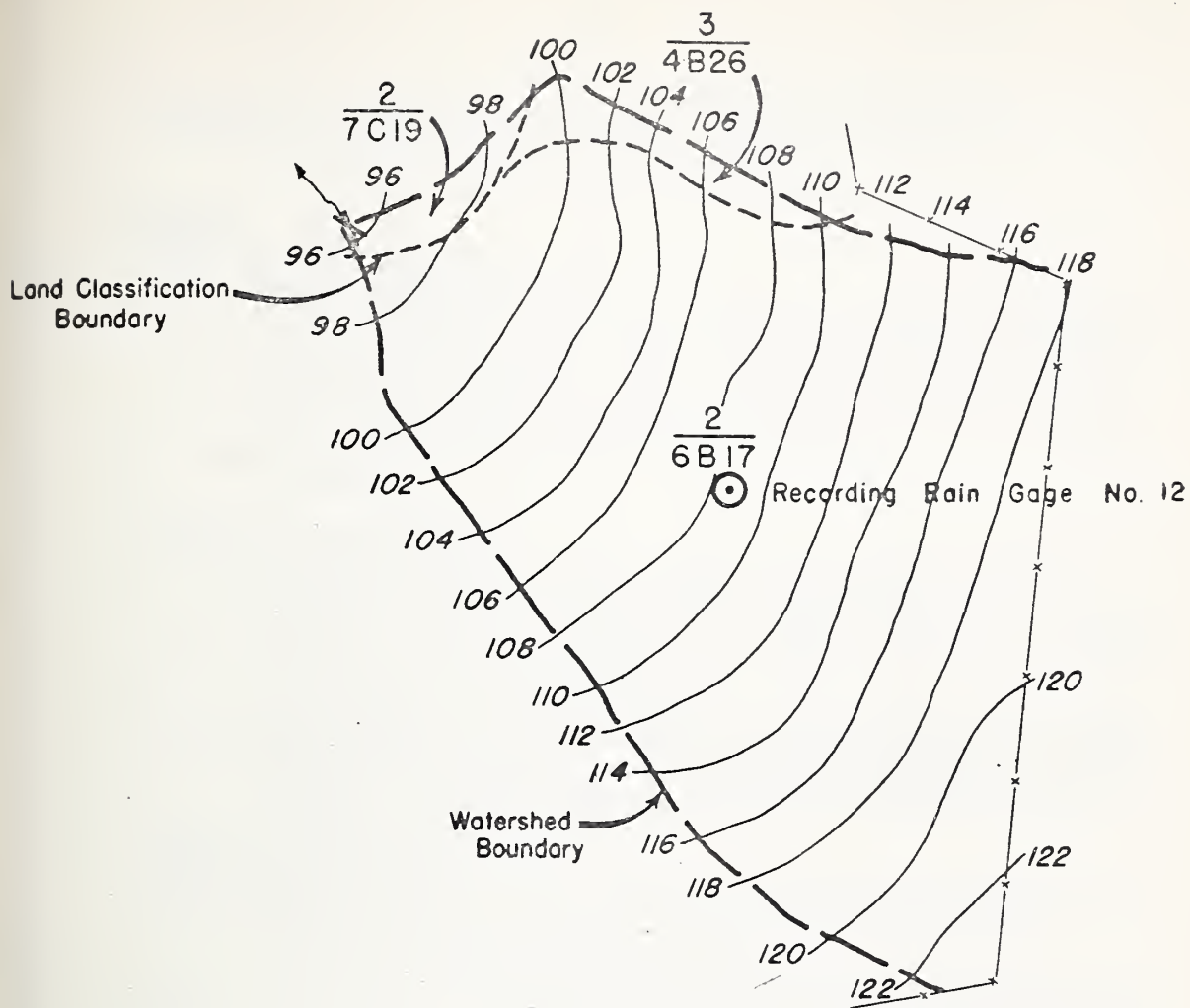
Guthrie, Oklahoma

AREA: 5.28 ACRES

SCALE (FEET)



$\frac{3}{5B26} = \frac{\text{Erosion Class}}{\% \text{Slope} - \text{Slope Group} - \text{Soil}}$
See pages 39-40 for legend



$$\frac{3}{4 \text{ B } 26} = \frac{\text{Erosion Class}}{\% \text{ Slope} - \text{Slope Group} - \text{Soil}}$$

See pages 39-40 for legend

LEGEND FOR WATERSHED MAPS SHOWING EROSION, SLOPE, AND
LAND USE (figs. 2, 3, 4, 5, and 6)

Erosion

Sheet erosion classes:

1. No appreciable erosion.
2. Slight sheet erosion - less than 25% of topsoil removed.
3. Moderate sheet erosion - 25 to 75% of topsoil removed.
4. Severe sheet erosion - more than 75% of topsoil removed and (or) part of B horizon removed.
5. Very severe sheet erosion - part of lower B or C horizon removed.

Gully erosion classes

7. Occasional gullies - Less than 3 gullies per acre or gullies 100 feet or more apart laterally.
8. Frequent gullies - more than 3 gullies per acre or gullies less than 100 feet apart laterally. Less than 75% of delineated area in gullies.
9. Very frequent or destructively large gullies. More than 75% of the delineated area included in gullies. This may be one large gully which can be delineated or a number of small gullies.

Classes of gullies

- A. Gullies which can be crossed by farming implements but which would not be obliterated by normal tillage. These are designated as 7, 8, or 9.
- B. Gullies which cannot be crossed by farming implements and which have not penetrated into a deep friable C horizon. They are designated as 7, 8, or 9. Individual gullies of this type designated thus:
- C. Gullies which cannot be crossed by farming implements and which have penetrated into a deep friable C horizon. These are very deep gullies. They are designated as 7, 8, or 9. Individual gullies of this type are designated thus:

Accumulations

Accumulations of soil material washed down from adjacent slopes are mapped as plus (+) erosion in four classes thus:

- a. 0 to 6 inches accumulated.
- b. 6 to 12 inches accumulated.
- c. 12 to 18 inches accumulated.
- d. 18 or more inches accumulated.

Slope classes:

- A. 0 to 3% but not including 3%.
- B. 3 to 7%.
- C. 7 to 10%.
- D. Over 10%.

Land Utilization classes:

- L - Cultivated land or land in crops.
- P - Pasture.
- P₁ - Meadow.
- P₂ - Pasture formerly cultivated.
- F - Forest or woodland.
- X - Idle or abandoned land.
- H - Undifferentiated land use such as farmsteads, villages, etc.

Land use boundaries and symbols shown in red and independent of soil boundaries.

Composite symbol

Sheet erosion - gully erosion

Slope % - Slope class - Soil type

For example:

37 or 37-4B-17 or 37 may be used to indicate the
4B-17 4B 17 following condition:

Moderate sheet erosion - occasional gullies
4% slope of B class - Vernon fine sandy loam

Soil legend

- 1 Yahola fine sandy loam
- 3 Yahola very fine sandy loam, high bottom phase
- 12 Kirkland fine sandy loam
- 13 Vernon clay loam
- 17 Stephenville fine sandy loam
- 18 Rough broken land, Stephenville soil material
- 19 Nash very fine sandy loam
- 22 Noble fine sandy loam
- 26 Chickasha fine sandy loam



UNITED STATES DEPARTMENT OF AGRICULTURE
 SOIL CONSERVATION SERVICE
 DIVISION OF RESEARCH

 Soil Conservation Station
 Research Station
 Box 465, Guthrie, Oklahoma

 MONTH January - December, 1931
 SHEET 1 OF 3 SHEETS

RECORD OF SINGLE STORMS AND THEIR RUN-OFFS ON VARIOUS WATERSHEDS

PROJECT

SHEET 1 OF 3 SHEETS

DATE	WATERSHED		RAINFALL				TEMPERATURE (degree F.)		Run-off			RAINFALL MINUS RUN-OFF (inches)	Soil Loss (tons per acre)	CONSERVATION OF WATERED
	Number	Area (acres)	Onset No.	Hours (hour)	Duration (minutes)	Amount (inches)	MAXIMUM INTENSITY		5 minutes (inches per hour)	15 minutes (inches per hour)	30 minutes (inches per hour)			
	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)
1/9 - 11	# 1	35	Field 12:20A	16:10	870	0.73	0.72	0.28	0.20					Basins A - Watershed No. 1
" "	# 2	3.61	"	"	"	"	"	"	"	"	"	"	"	Plot 13 - " " 2
" "	# 3	3.13	"	"	"	"	"	"	"	"	"	"	"	" 15A - " " 3
" "	# 4	5.62	"	"	"	"	"	"	"	"	"	"	"	" 1 - " " 4
" "	# 5	5.28	"	"	"	"	"	"	"	"	"	"	"	" J - " " 5
" "	# 6	5.99	"	"	"	"	"	"	"	"	"	"	"	Terrace 2B - " " 6
" "	# 7	5.67	"	"	"	"	"	"	"	"	"	"	"	" 3B - " " 7
" "	# 8	2.85	"	"	"	"	"	"	"	"	"	"	"	" 3C - " " 8
" "	# 9	2.58	"	"	"	"	"	"	"	"	"	"	"	" 5C - " " 9
1/17 & 18	# 1 & 9	As Above	"	"	8:10P	0.14	"	"	"	"	"	"	"	No. 1
2/6	"	"	"	"	2:35A	80	0.04	"	"	"	"	"	"	Basins A - Soil Vernon Fine
2/7 & 8	"	"	"	"	11:10A	1305	0.30	"	"	"	"	"	"	Sandy Loam-Eroded Phase. Av-
2/11	"	"	"	"	5:30A	50	0.02	"	"	"	"	"	"	erage land slope 14.51%. Ap-
2/12 & 13	"	"	"	"	4:00P	1020	0.15	"	"	"	"	"	"	proximately 32 acres cultivated
2/15 & 16	"	"	"	"	10:10P	400	0.11	"	"	"	"	"	"	3 acres roadside and drainage
2/21	"	"	"	"	6:12A	230	0.37	"	"	"	"	"	"	ditch. See 2 and 3-B for data
2/23	"	"	"	"	8:15P	15	0.04	"	"	"	"	"	"	of field operations.
2/26	"	"	"	"	2:35A	190	0.37	"	"	"	"	"	"	No. 2
2/17 & 18	"	"	"	"	10:15A	2815	1.00	"	"	"	"	"	"	Plot 13 - Soil Vernon Fine
3/26	"	"	"	"	1:15A	50	0.14	"	"	"	"	"	"	Sandy Loam-Eroded Phase. Av-
3/21	"	"	"	"	A.M.	Snow	0.08	"	"	"	"	"	"	erage land slope 5.13%. Un-
3/30	"	"	"	"	6:15A	1500	0.61	"	"	"	"	"	"	tarraced - Plowed 4/15 to 17 -
4/9	"	"	"	"	6:15A	600	0.51	"	"	"	"	"	"	harrowed 4/29 - planted to
4/1	# 1	"	"	"	11:18A	105	1.72	4.92	3.92	2.86	"	15.78	11:11A	Corn 5/3 & 5 - cultivated
"	# 2	"	"	"	"	"	"	"	"	"	"	6.39	11:38A	5/20 & 22 - Peas plowed under
"	# 3	"	"	"	"	"	"	"	"	"	"	0.77	11:55A	9/26 - Wheat drilled 10/11/31
"	# 4	"	"	"	"	"	"	"	"	"	"	6.14	11:43A	No. 3
"	# 5	"	"	"	"	"	"	"	"	"	"	10.07	11:52A	Plot 15A - Soil Vernon Fine
"	# 6	"	"	"	"	"	"	"	"	"	"	6.97	11:48A	Sandy Loam-Eroded Phase. Av-
"	# 7	"	"	"	"	"	"	"	"	"	"	5.07	11:46A	erage land slope 3.10%. Ter-
"	# 8	"	"	"	"	"	"	"	"	"	"	2.25	12:02P	aced - Plowed 4/15 to 17 -
"	# 9	"	"	"	"	"	"	"	"	"	"	"	"	harrowed 4/29 - planted to
4/1	# 1	"	"	"	5:55A	665	0.97	0.72	0.56	0.32	"	"	"	Corn 5/3 & 5 - cultivated
"	# 2	"	"	"	"	"	"	"	"	"	"	0.12	3:55P	5/20 & 22 - Peas plowed under
"	# 3	"	"	"	"	"	"	"	"	"	"	"	"	9/26 - Wheat cover drilled
"	# 4	"	"	"	"	"	"	"	"	"	"	"	"	10/11/31
"	# 5	"	"	"	"	"	"	"	"	"	"	0.29	3:18P	No. 4
"	# 6	"	"	"	"	"	"	"	"	"	"	0.16	3:20P	Plot 1 - Wooded Virgin Soil
"	# 7	"	"	"	"	"	"	"	"	"	"	0.46	2:25P	Condition cover of Native
"	# 8	"	"	"	"	"	"	"	"	"	"	0.15	3:00P	Woods and Brush (Undisturbed)
"	# 9	"	"	"	"	"	"	"	"	"	"	0.11	3:32P	

MONTH January - December 1933

Box 465, Guthrie, Oklahoma

RECORD OF SINGLE STORMS AND THEIR RUN-OFFS ON VARIOUS WATERSHEDS

SHEET 2 OF 3

[illegible]

UNITED STATES DEPARTMENT OF AGRICULTURE
 SOIL CONSERVATION SERVICE
 DIVISION OF RESEARCH

 Soil Conservation Service
 Research Station
 Box 466, Guthrie, Oklahoma

RECORD OF SINGLE STORMS AND THEIR RUN-OFFS ON VARIOUS WATERSHEDS

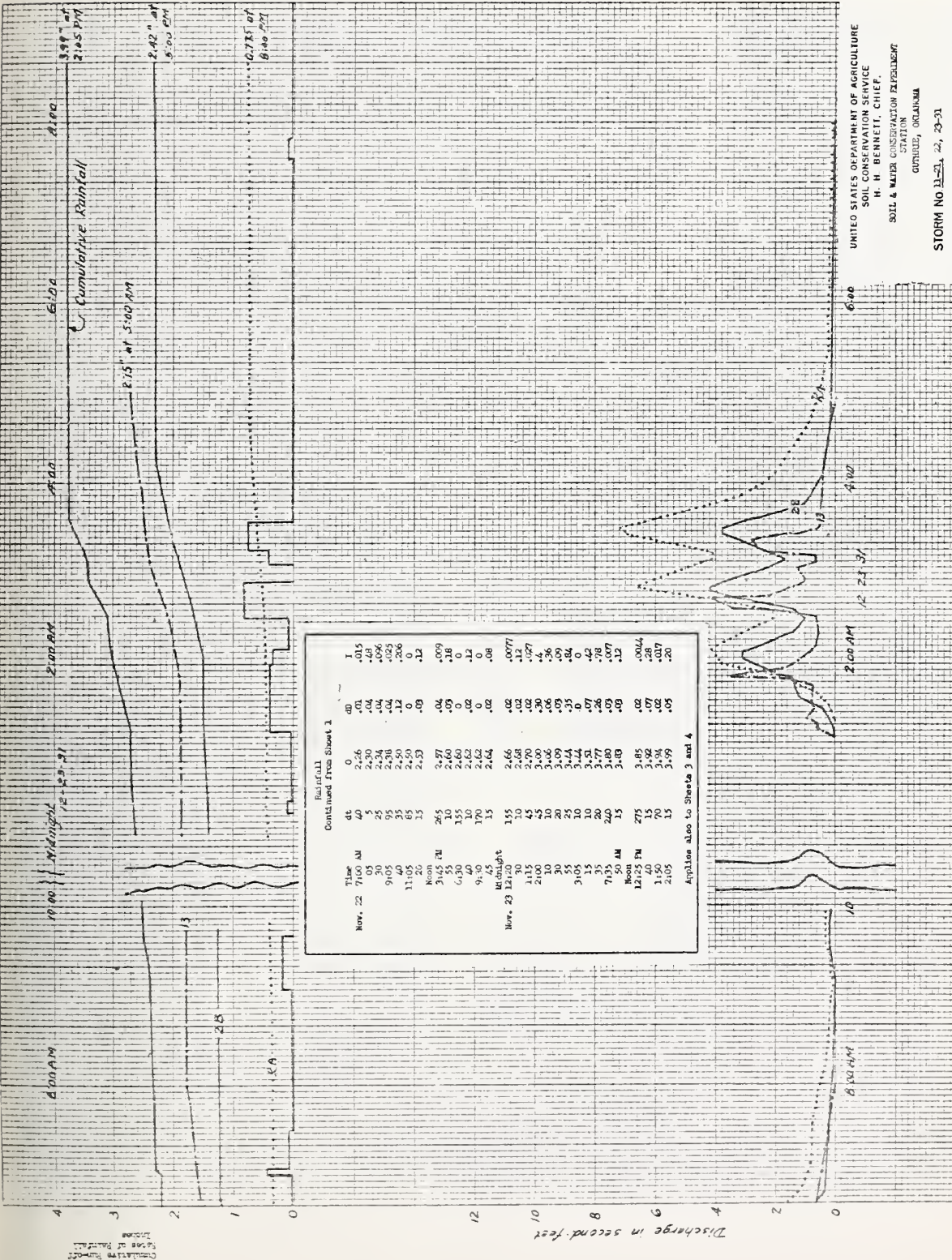
 MONTH January - December, 1931
 SHEET 3 OF 3

PROJECT

WATERSHED

DATE	COLLECTOR	Area (acres)	Oage No.	Begin (hour)	Duration (minutes)	Amount (inches)	RAINFALL			TEMPERATURE (degrees F)		Begin (hour)	Amount (inches)	MAXIMUM RATE		RAINFALL METERS RUN-OFF (inches)	Silt Loss (tons per acre)	CONDITION OF WATERSHED
							5 minutes (inches per hour)	15 minutes (inches per hour)	30 minutes (inches per hour)	Maximum	Minimum			Ch. ft. sec.	Time			
1931							(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
8/31-9/1	# 1	As Above	Field B	10:25P	1150	1.76	5.28	3.40	1.84			3:49P	7:15P	0.43	3:58P	1.63		No. 8 Terrace 3-C - Soil Vernon Fine Sandy Loam - Average land slope 4.5% - Grade 6 in. per 100 ft. - Vertical spacing - 3.51 ft. - Flowed with moldboard 11/21 to 28/1930 - disked with tandem disc 2/11/31 - Drilled to Oats 2/12 Oats harvested in June - Flowed with one-way disc plow 3 in. deep 6/22 - Planted to Cowpeas 6/23 - cultivated 8/6 & 7 - Cowpeas. tandem disc. 11/9 & 10
10/6	# 1-#9	"	"	2:15A	15	0.02												
10/9	"	"	"	2:10A	55	0.02												
10/11	"	"	"	12:25P	120	0.56			0.24									
10/13	"	"	"	4:05P	20	0.07	0.48	0.32										
10/15	"	"	"	5:25A	10	0.03												
10/21	"	"	"	7:40A	145	0.38	1.20	0.64	0.48									
11/13	"	"	"	1:38A	150	0.42	1.92	1.20	0.70									
11/14	"	"	"	1:05P	65	0.14												
11/20 & 21	# 1	"	"	2:45P	830	4.15	2.64	1.68	1.48			4:49P	8:00P	8.16	6:47P	3.55		
"	"	"	"	"	"	"	"	"	"			Instrument Failure						
"	"	"	"	"	"	"	"	"	"			4:41P	6:53A	1.88	6:40P	2.66		
"	"	"	"	"	"	"	"	"	"			7:01P	8:38P	0.037	7:23P	4.08		
"	"	"	"	"	"	"	"	"	"			No Run-off						
"	"	"	"	"	"	"	"	"	"			4:25P	3:31A	5.44	6:39P	2.15		
"	"	"	"	"	"	"	"	"	"			4:39P	7:37A	5.44	6:38P	2.13		
"	"	"	"	"	"	"	"	"	"			5:16P	5:05A	2.32	6:41P	2.95		
"	"	"	"	"	"	"	"	"	"			4:55P	4:30A	1.39	6:47P	3.12		
11/21-23	# 1	"	"	6:15P	2630	4.08	2.04	1.56	1.00			6:30P	8:00P	8.30	3:48A	3.30		
"	# 2	"	"	"	"	"	"	"	"			6:23P	5:00A	8.00	3:50A	1.35		
"	# 3	"	"	"	"	"	"	"	"			6:27P	9:52A	3.64	3:50A	2.04		
"	# 4	"	"	"	"	"	"	"	"			1:03A	5:18A	0.54	3:47A	1.02		
"	# 5	"	"	"	"	"	"	"	"			6:23P	6:00A	4.11	3:30A	2.80		
"	# 6	"	"	"	"	"	"	"	"			6:25P	5:00P	6.11	3:57A	1.66		
"	# 7	"	"	"	"	"	"	"	"			6:20P	4:30A	5.66	3:30A	1.65		
"	# 8	"	"	"	"	"	"	"	"			6:25P	7:03P	3.35	3:35A	2.51		
"	# 9	"	"	"	"	"	"	"	"			6:20A	6:40P	1.80	3:36A	2.46		
11/25 & 26	# 1-#9	"	"	8:00P	915	0.17	0.24	0.12	0.10									
11/28/29	"	"	"	8:40P	550	0.54	0.36	0.24	0.16									
12/8	"	"	"	10:00A	105	0.09												
12/14/11	"	"	"	12:00P	1200	0.38	0.48	0.16	0.08									
12/20	"	"	"	7:00A	145	0.03												
12/31	"	"	"	8:00A	450	0.11												

 Soil Loss not Measured on
 Ravine A and Plot J
 • Total amount of rainfall
 based on Standard Gage.



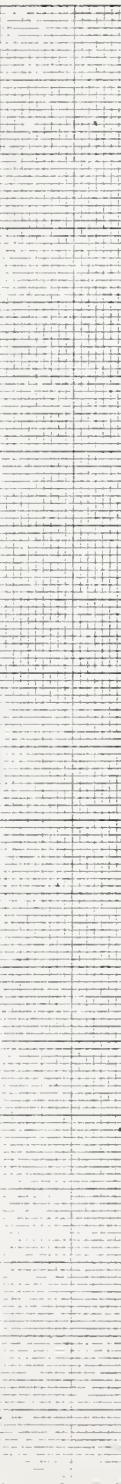
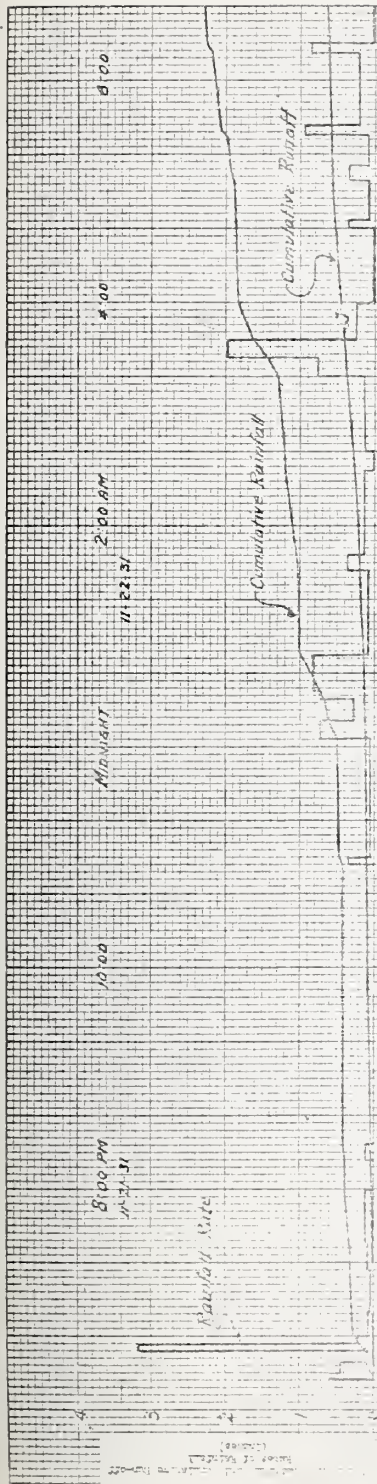
Rainfall
Continued from Sheet 1

Time	4h	0	4h	T
Nov. 22 7:00 AM	40	2.26	.01	.015
05	5	2.30	.04	.48
30	25	2.34	.04	.096
9:05	35	2.38	.04	.025
11:05	85	2.50	.02	.006
20	15	2.53	.03	0
25	15	2.57	.04	.009
30	10	2.60	.05	.18
4:30	10	2.62	.02	.12
40	10	2.64	.02	.08
45	15	2.66	.02	.0077
Midnight	155	2.66	.02	.0077
Nov. 23 12:00	10	2.70	.02	.0077
15	45	3.00	.30	.36
200	10	3.06	.06	.36
10	10	3.09	.05	.38
55	25	3.14	.05	.42
3:05	10	3.21	.07	.42
15	10	3.27	.06	.78
3:55	20	3.37	.05	.07
7:55	20	3.40	.03	.12
50 AM	15	3.48	.03	.004
Noon	275	3.85	.02	.004
12:25 PM	10	3.92	.07	.07
1:50	70	3.96	.02	.07
2:05	15	3.99	.05	.20

Applies also to Sheets 3 and 4

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
H. H. BENNETT, CHIEF.
SOIL & WATER CONSERVATION EXPERIMENT
STATION
COLUMBIA, OKLAHOMA

STORM NO 11-23, 22, 23-31
Pre by S. I. date 2-15-33 checked by S. S. date 3-16-39
Computation by S. I. date 2-15-33 checked by S. S. date 3-16-39
COLUMBIA, OKLAHOMA
NOV. 23-29, 1931
SHEET 2 OF 4



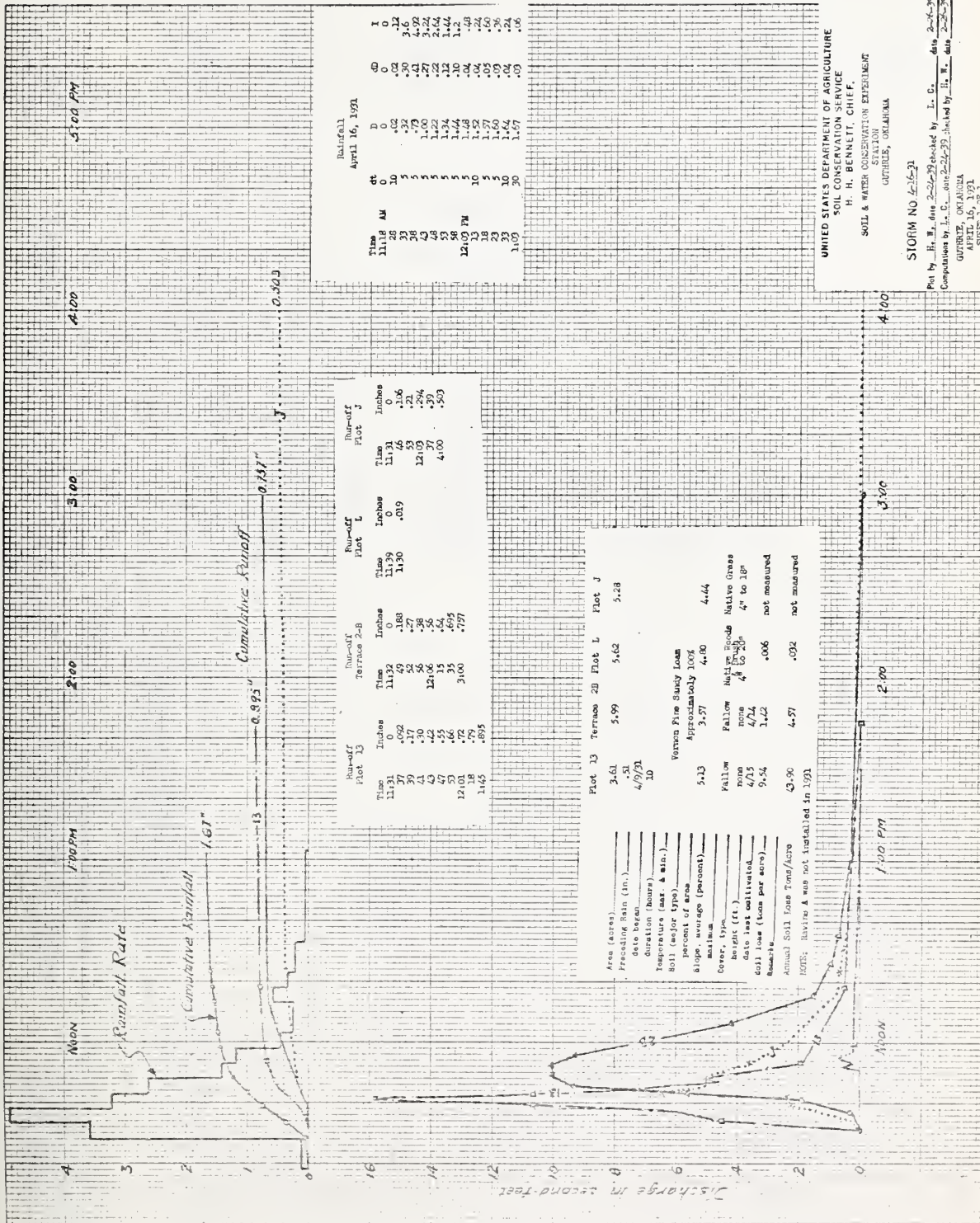
Plot L	Plot J
Area (acres) 5.62	5.28
Preceding Rain (in.) 4.15	
Date begun 11/16-17/31	
Duration (hours) 14	
Temperature (max. & min.)	
Soil (major type) Vernon Fine Sandy Loam	
Percent of area Approximately 100%	
Slope, average (percent) 4.80	4.44
Cover, type Native Woods Native Grass	
Height (ft.) 5' to 20'	5' to 24'
Water last cultivated	Not measured
Roots (time per acre)	Not measured
Annual Soil Loss Tons/Acre .032	Not measured

Run-off Plot L	Run-off Plot J
Time 6:12 PM	Time 6:23 PM
(21) 7:00 AM	(22) 12:38 AM
(22) 5:10 AM	(23) 5:00 AM
(23) 5:10 AM	(24) 5:00 AM
	(25) 5:00 AM
	(26) 5:00 AM
	(27) 5:00 AM
	(28) 5:00 AM
	(29) 5:00 AM
	(30) 5:00 AM
	(31) 5:00 AM
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	(99) 5:00 AM
	(100) 5:00 AM

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
H. M. BENNETT, CHIEF
SOIL & WATER CONSERVATION DISTRICT
OQUIMA, OQUIMA

STORM NO. 11-21, 22, 23-31

Plot by S. L. den 2-15-31 checked by S. L. den 3-15-31
Completion by S. L. den 2-15-31 checked by S. L. den 3-15-31



UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
H. H. BENNETT, CHIEF
SOIL & WATER CONSERVATION EXPERIMENT
OUTREACH, OKLAHOMA

STORM NO 4-15-31

Plot by H. H. Bennett, checked by L. E. Bennett, dated 2-26-39
Computation by L. E. Bennett, checked by H. H. Bennett, dated 2-26-39
OUTREACH, OKLAHOMA
APRIL 16, 1931
SHEET 1 OF 1

MONTH January - December, 19 32
SHEET 1 OF 5 SHEETS

RECORD OF SINGLE STORMS AND THEIR RUN-OFFS ON VARIOUS WATERSHEDS

[illegible]

RECORD OF SINGLE STORMS AND THEIR RUN-OFFS ON VARIOUS WATERSHEDS

WATERWAYS	Number	Area (acres)	RAINFALL				TRANSPIRATION (degrees F.)		RUN-OFF				RAINFALL MONTH RUN-OFF (in. per acre)	Soil Loss (tons per acre)	COMMENTS ON WATERWAY			
			Date No.	Begin (hour)	Duration (minutes)	Amount (inches)	MAXIMUM INTERSTICES			Soiled (hour)	Amount (inches)	Time (hr. sec.)						
							8 minutes (inches per hour)	10 minutes (inches per hour)	20 minutes (inches per hour)									
	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)			
1932	1	AS ABOVE	Field II	6:15P	65	0.31	2.16	0.96	0.52	9:01P	2:50A	1.49	61.53	9:25P	1.52	No. 5 Plot J Soil-Vernon Fine Sandy Loam - Badly gullied and eroded Average land slope = 4.44% Cover of Native Grass		
	2	"	"	"	"	0.16	1.20	0.56	0.10	8:58P	1:00A	2.10	22.53	9:18P	0.91	"		
	3	"	"	"	"	0.38	"	"	"	9:05E	1:08A	0.95	7.49	9:27P	2.06	"		
	4	"	"	"	"	0.02	"	"	"	9:17E	10:52P	0.04	0.49	9:23P	2.97	"		
	5	"	"	"	"	0.66	"	"	"	9:00P	10:43P	0.53	9.54	9:33P	2.18	"		
	6	"	"	"	"	0.66	"	"	"	9:21E	11:40P	1.13	11.87E	9:39P	1.98	"		
	7	"	"	"	"	0.66	"	"	"	8:51P	2:21A	1.37	12.01	9:21P	1.64	"		
	8	"	"	"	"	0.66	"	"	"	8:51P	"	1.11E	1.50	"	1.50	"		
	9	"	"	"	"	0.66	"	"	"	8:59P	2:25A	1.67	5.41	9:27P	1.34	"		
1933	1	"	"	"	"	0.81	0.72	0.56	0.52	1:11A	2:58P	0.22	3.56	5:35A	0.59	No. 6 Terrace 2-E Soil-Vernon Fine Sandy Loam - Eroded Phase Average land slope = 2.79% Vertical spacing = 3.99 ft Grade = variable 0" to 1" Plowed 4/6-7 Dicked 4/19-20 Planted to Corn 4/20 Cultivated 5/10, 5/26, 6/13 Cows planted between rows 7/22 Corn harvested 8/22 to 25 Stalks plowed under 10/11		
	2	"	"	"	"	"	"	"	"	Instrument failure	"	"	0.14	5:23A	0.67	"		
	3	"	"	"	"	"	"	"	"	No Run-off	"	"	"	"	"	"		
	4	"	"	"	"	"	"	"	"	No Run-off	"	"	"	"	"	"		
	5	"	"	"	"	"	"	"	"	1:15A	10:21A	0.17	0.71	5:26A	0.64	No. 7 Terrace 3-E Soil-Vernon Fine Sandy Loam - Eroded Phase Average land slope = 4.21% Vertical spacing = 3.45 ft. Grade - variable 0" to 6" Plowed 4/9-9 Dicked 4/20-21 Planted to Corn 4/21 Cultivated 5/11, 5/27, 6/11 Cows planted between rows 7/23 Corn harvested 8/21-27 Stalks plowed under 10/11-20		
	6	"	"	"	"	"	"	"	"	1:07A	10:50A	0.22	0.77	5:25A	0.59	"		
	7	"	"	"	"	"	"	"	"	5:05A	8:58A	0.13E	0.16	5:50A	0.71	"		
	8	"	"	"	"	"	"	"	"	1:14A	3:06P	0.24	0.16	5:50A	0.71	"		
	9	"	"	"	"	"	"	"	"	3:20A	12:58P	0.66	22.17	4:53A	0.43	"		
1934	1	"	"	"	"	1.09	2.40	1.62	1.12	3:15A	9:00A	0.78	6.80	4:55A	0.31	No. 8 Terrace 3-C Soil-Vernon Fine Sandy Loam Average land slope = 4.33% Vertical spacing = 3.51 ft. Grade 6" to 100" Jan. 1, ground bare Jan. 2, plowed with moldboard 6" deep		
	2	"	"	"	"	"	"	"	"	3:02A	10:00A	0.59	2.96	5:06A	0.50	"		
	3	"	"	"	"	"	"	"	"	4:05A	7:03A	0.613	0.225	5:15A	1.05	"		
	4	"	"	"	"	"	"	"	"	3:18A	6:30A	0.30	3.44	5:06A	0.73	"		
	5	"	"	"	"	"	"	"	"	3:14A	9:11A	0.76	6.92E	5:01A	0.55	"		
	6																	

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
DIVISION OF RESEARCH

MONTH January - December, 1932
SHEET 3 OF 5 SHEETS

RECORD OF SINGLE STORMS AND THEIR RUN-OFFS ON VARIOUS WATERSHEDS

[illegible]



UNITED STATES DEPARTMENT OF AGRICULTURE
 SOIL CONSERVATION SERVICE
 DIVISION OF RESEARCH

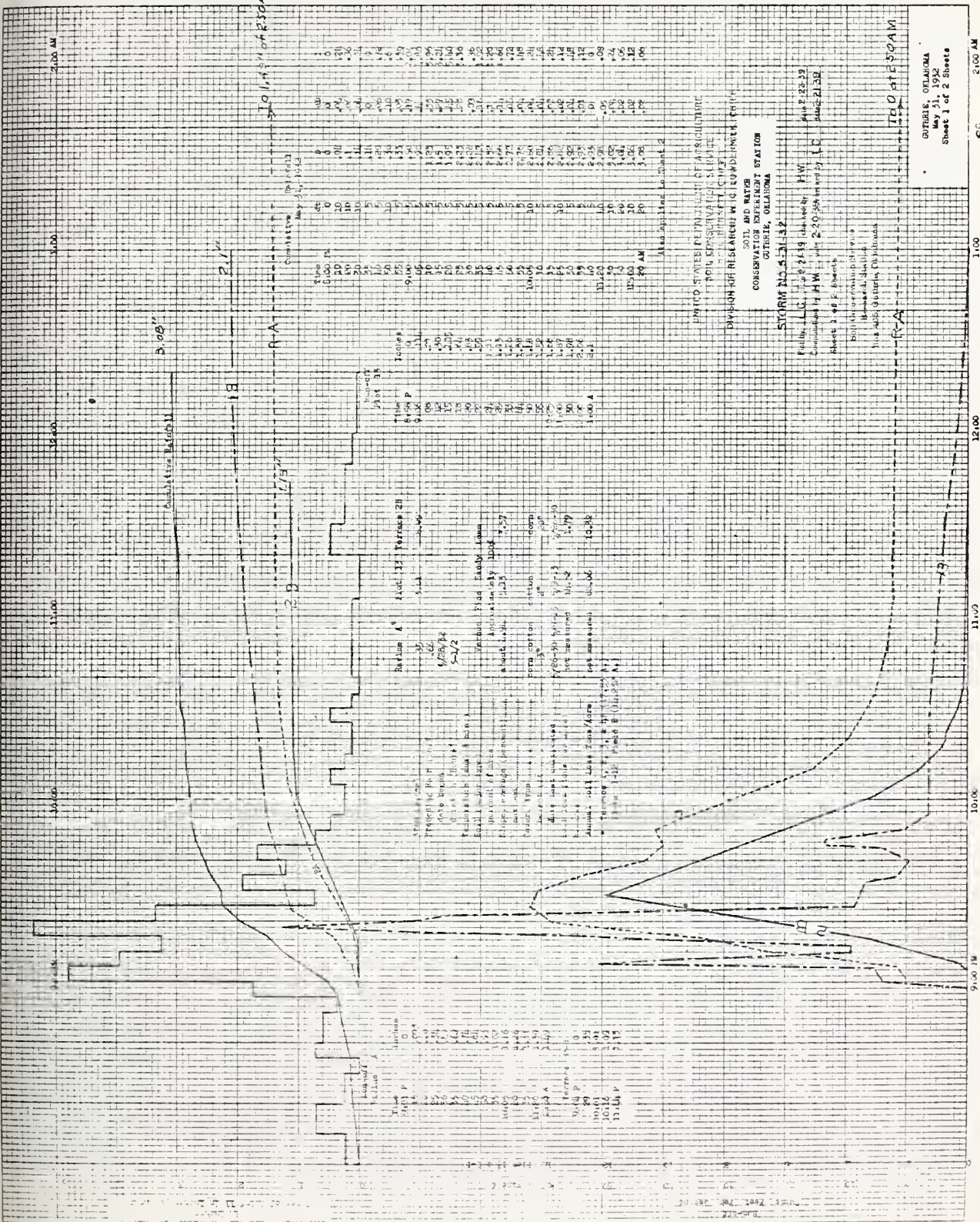
 Soil Conservation Service
 Research Station
 Project 204-245, Saltillo, Chihuahua

 MONTH January - December, 19 32
 SHEET 4 OF 5 SHEETS

RECORD OF SINGLE STORMS AND THEIR RUN-OFFS ON VARIOUS WATERSHEDS

DATE	WATERSHED	RAINFALL				TEMPERATURES (Fahrenheit)				RUN-OFF				RAINFALL DEFICIT (inches)	SIZE LOSS (tons per acre)	CONVENTIONS OF WATERED
		Amount (inches)	MAXIMUM INTENSITY			Maximum	Minimum	1st-4 (days)	Amount (cubic)	MAXIMUM RATE						
			15 minutes (inches per hour)	30 minutes (inches per hour)	60 minutes (inches per hour)					Cu. ft. sec.	Time					
10/22	#1	0.53	0.96	0.40	0.20	81		no run-off	0.07	0.93	6:15P	0.16				
10/23	#2	0.04				87	70	6:20P 9:11P	0.26	3.44	6:33P	0.27				
7/3	#3	1.76	4.20	2.21		82	77	6:11P 8:23P	0.22	3.35	6:40P	0.31				
7/5	#4							6:20P 8:30P	0.27	1.93	6:12P	0.26				
7/6	#5							6:10P 9:17P	0.22	0.99	6:32P	0.31				
7/7	#6	1.76	4.20	2.21		82	77	9:15A 7:10P	0.96	58.15	1:18P	0.80				
7/8	#7							2:26A 4:10P	0.95	21.63	1:50P	0.81				
7/9	#8							3:17A 6:17P	0.18	1.37	2:11P	1.58				
7/10	#9							5:21A 7:11P	0.62	13.18	1:50P	1.14				
7/11	#10							9:18A 7:00P	1.10	12.42	1:57P	0.66				
7/12	#11							9:16A 7:14P	1.02	12.20	1:18P	0.74				
7/13	#12							9:15A 4:50P	1.22	9.27	1:52P	0.54				
7/14	#13							9:13A 6:05P	1.15	4.70	1:50P	0.62				
7/15	#14	0.21	2.10	0.54	0.14	90	69									
7/16	#15	0.25	1.80	0.12	0.10	97	70									
7/17	#16	0.06				100	81									
7/18	#17	0.04				99	74									
7/19	#18	2.78	3.50	2.24	1.52	78-77	73-71	Instrument Failure								
7/20	#19							11:29P 8:08A	0.68	5.12	12:07A	3.10				
7/21	#20							12:01A 11:01P	0.36	0.15	12:16A	3.12				
7/22	#21							11:53P 6:47A	0.03	0.25	12:11A	2.75				
7/23	#22							11:47P 6:22A	0.11	1.44	12:08A	3.67				
7/24	#23							11:27P 1:00P	1.31	6.80	12:20A	2.44				
7/25	#24							11:23P 1:52P	1.67	6.92	12:07A	2.11				
7/26	#25							11:54P 10:00A	0.45	0.445	12:01A	3.23				
7/27	#26							11:30P 3:12P	0.46	0.43	12:01A	2.92				
7/28	#27							Instrument Failure								
7/29	#28	0.58	1.20	0.49	0.32	69	64									
7/30	#29	0.44	1.80	1.04	0.53	89	61									
7/31	#30	0.23	0.36	0.16	0.16	94	65									
8/1	#31	0.32	0.36	0.16	0.12	65	57									
8/2	#32	0.94	1.75	0.91	1.03	85	62	5:10P 12:00M	0.30	15.55	6:02P	0.24				
8/3	#33							5:10P 7:53P	0.95	19.55	5:44P	0.36				
8/4	#34							Instrument Failure								
8/5	#35							5:10P 1:02P	0.01	0.30	5:50P	0.93				





UNITED STATES DEPARTMENT OF AGRICULTURE
 SOIL CONSERVATION SERVICE
 DIVISION OF RESEARCH AND CONSERVATION

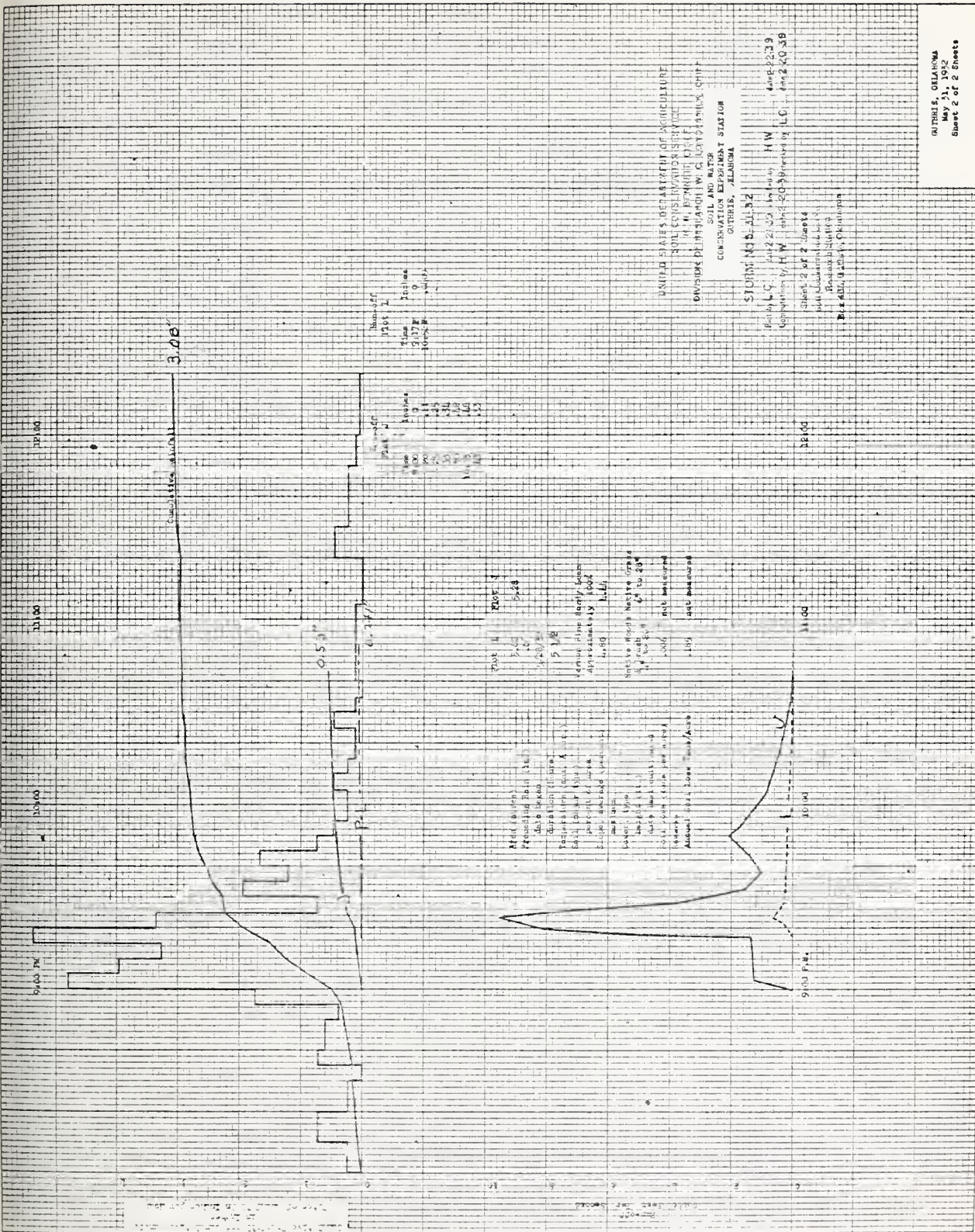
SOIL AND WATER
 CONSERVATION EXPERIMENT STATION
 OTTAWA, OKLAHOMA

STORM NO. 4-3-32

Field No. 10-2-32
 Computed by H.W. 10-2-32
 Sheet 1 of 2

Soil Conservation Service
 Research Station
 10-2-32

OTTAWA, OKLAHOMA
 May 31, 1932
 Sheet 1 of 2



UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
DIVISION OF INVESTIGATION OF EROSIONAL DAMAGE
OKLAHOMA
CONSERVATION EXPERIMENT STATION
OKLAHOMA, ALABAMA

STATION NO. 2-11-32

Established by H.W. Smith, 2-2-33, by H.W. Smith, 2-2-39

Acquisition by H.W. Smith, 2-2-33, by H.W. Smith, 2-2-39

Sheet 2 of 2 Sheets

Map Scale 1:10,000

Project No. 2-11-32

Project No. 2-11-32

Project No. 2-11-32

Project No. 2-11-32

Project No. 2-11-32

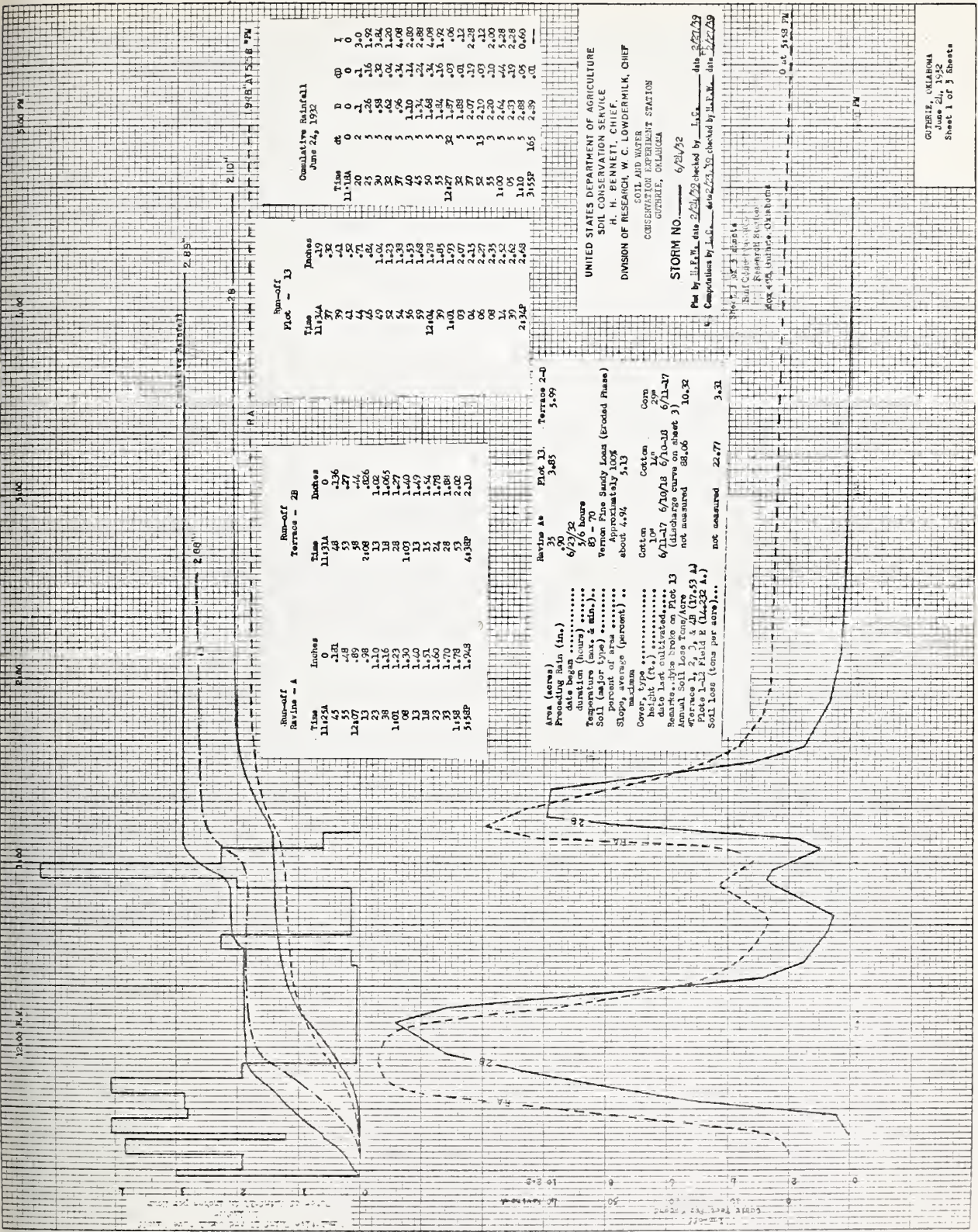
Project No. 2-11-32

Project No. 2-11-32

Project No. 2-11-32

Project No. 2-11-32





Run-off
Savine - A

Time	Inches
11:00 AM	0
11:15 AM	0.48
11:30 AM	0.89
11:45 AM	0.98
12:00 PM	1.10
12:15 PM	1.25
12:30 PM	1.30
12:45 PM	1.40
1:00 PM	1.51
1:15 PM	1.57
1:30 PM	1.70
1:45 PM	1.78
2:00 PM	1.943

Run-off
Terrace - 2B

Time	Inches
11:00 AM	0
11:15 AM	0.26
11:30 AM	0.44
11:45 AM	0.62
12:00 PM	1.02
12:15 PM	1.27
12:30 PM	1.40
12:45 PM	1.49
1:00 PM	1.54
1:15 PM	1.78
1:30 PM	2.00
1:45 PM	2.10

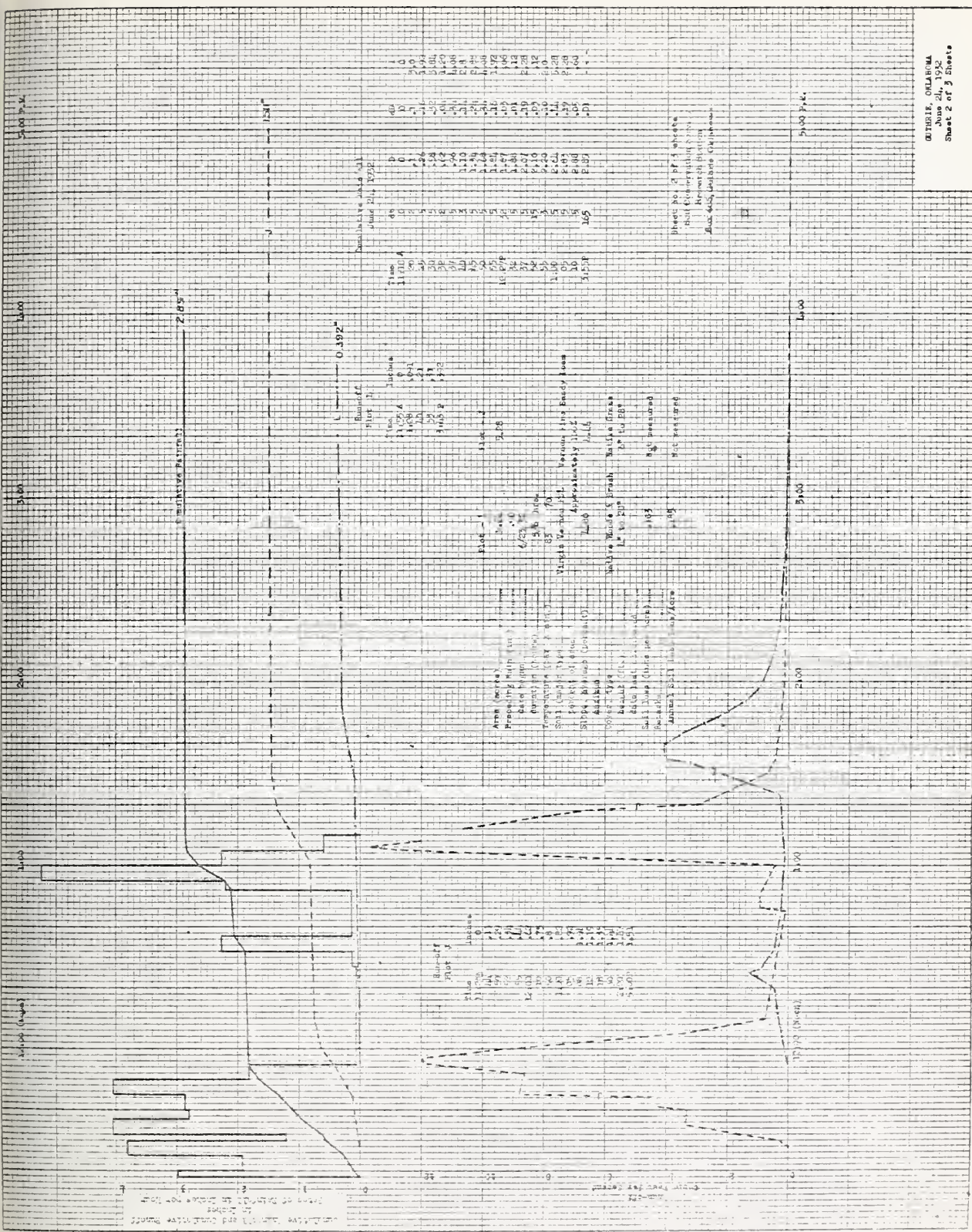
Run-off
Plot - 13

Time	Inches
11:00 AM	0.19
11:15 AM	0.32
11:30 AM	0.41
11:45 AM	0.57
12:00 PM	0.84
12:15 PM	1.04
12:30 PM	1.23
12:45 PM	1.38
1:00 PM	1.47
1:15 PM	1.68
1:30 PM	1.78
1:45 PM	1.89
2:00 PM	2.07
2:15 PM	2.25
2:30 PM	2.35
2:45 PM	2.52
3:00 PM	2.64
3:15 PM	2.83
3:30 PM	2.89
3:45 PM	3.02

Area (acres)
Plot 13 (in.)
date began
duration (hours)
Temperature (max & min.)
Soil (major type)
Slope
Cover, type
height (ft.)
also last cultivated
Annual Soil Loss (tons/acre)
Surface 1, 2, 3, & 4B (17.53 A)
Plot 1-12 Field E (14.23 A)
Soil loss (tons per acre)...

Run-off Ae Plot 13. Terrace 2-0
35 3.85 5.99
6/23/32
5/6 hours
85 - 70
Version Fine Sandy Loam (erosion Phase)
Approximately 100%
about 4% 5.13
Cotton Cotton Corn
6/11-17 6/20/18 6/10-18 6/11-17
10' 14' 20' 20'
discharge curve on sheet 3)
not measured 81.06 10.32
not measured 22.71 3.31

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
H. H. BENNETT, CHIEF
DIVISION OF RESEARCH, W. C. LOWDERMILK, CHIEF
SOIL AID WATER
CONSERVATION
GUTHRIE, OKLAHOMA
STORM NO. 6214/32
Plot by H.F.W. date 2/24/32 checked by J.E.S. date 2/27/32
Computation by J.E.S. date 2/24/32 checked by J.E.S. date 2/27/32
Sheet 1 of 3 sheets
Soil Conservation Service
Revised Station
Box 405, Guthrie, Oklahoma



12.00 (inches)

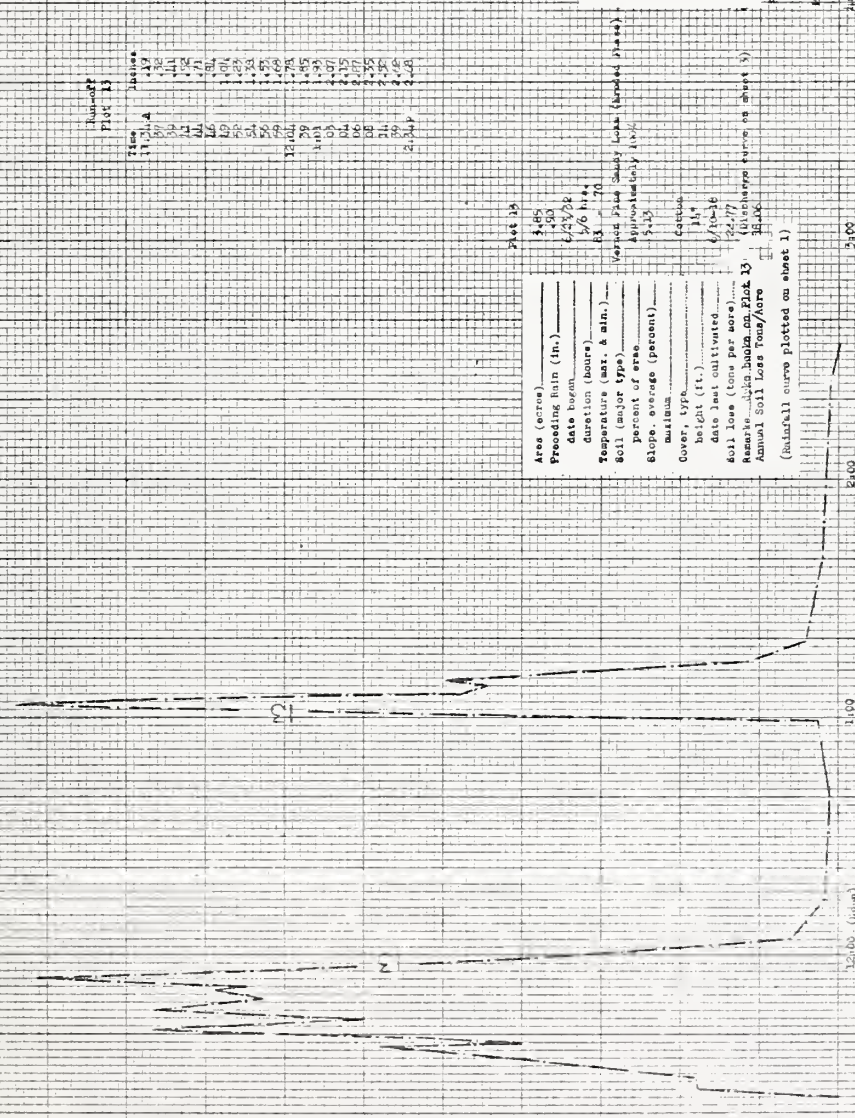
1.00

2.00

3.00

4.00

5.00 P.M.



Area (acres) 3.85
 Preceding Rain (in.) 4.50
 date begun 6/24/22
 duration (hours) 5/6 hrs.
 Temperature (air, & soil) 63 - 70
 Soil (major type) Very Fine Sandy Loam (harder than)
 percent of area approximately 100%
 Slope, average (percent) 5-13
 maximum
 Cover, type Cotton
 height (ft.) 14'
 date last cultivated 6/10-16
 Soil loss (tons per acre) 22.77
 Remarks: Much harder on Plot 13. (Use sharp curve on sheet 5)
 Annual Soil Loss Tons/Acre 11.38
 (Rainfall curve plotted on sheet 1)

Cumulative Rainfall
 June 24, 1922

Time	St	P	Q	4P	1
11:10 A	11	11	11	11	11
11:20	12	12	12	12	12
11:30	13	13	13	13	13
11:40	14	14	14	14	14
11:50	15	15	15	15	15
12:00	16	16	16	16	16
12:10	17	17	17	17	17
12:20	18	18	18	18	18
12:30	19	19	19	19	19
12:40	20	20	20	20	20
12:50	21	21	21	21	21
1:00	22	22	22	22	22
1:10	23	23	23	23	23
1:20	24	24	24	24	24
1:30	25	25	25	25	25
1:40	26	26	26	26	26
1:50	27	27	27	27	27
2:00	28	28	28	28	28
2:10	29	29	29	29	29
2:20	30	30	30	30	30
2:30	31	31	31	31	31
2:40	32	32	32	32	32
2:50	33	33	33	33	33
3:00	34	34	34	34	34
3:10	35	35	35	35	35
3:20	36	36	36	36	36
3:30	37	37	37	37	37
3:40	38	38	38	38	38
3:50	39	39	39	39	39
4:00	40	40	40	40	40
4:10	41	41	41	41	41
4:20	42	42	42	42	42
4:30	43	43	43	43	43
4:40	44	44	44	44	44
4:50	45	45	45	45	45
5:00	46	46	46	46	46

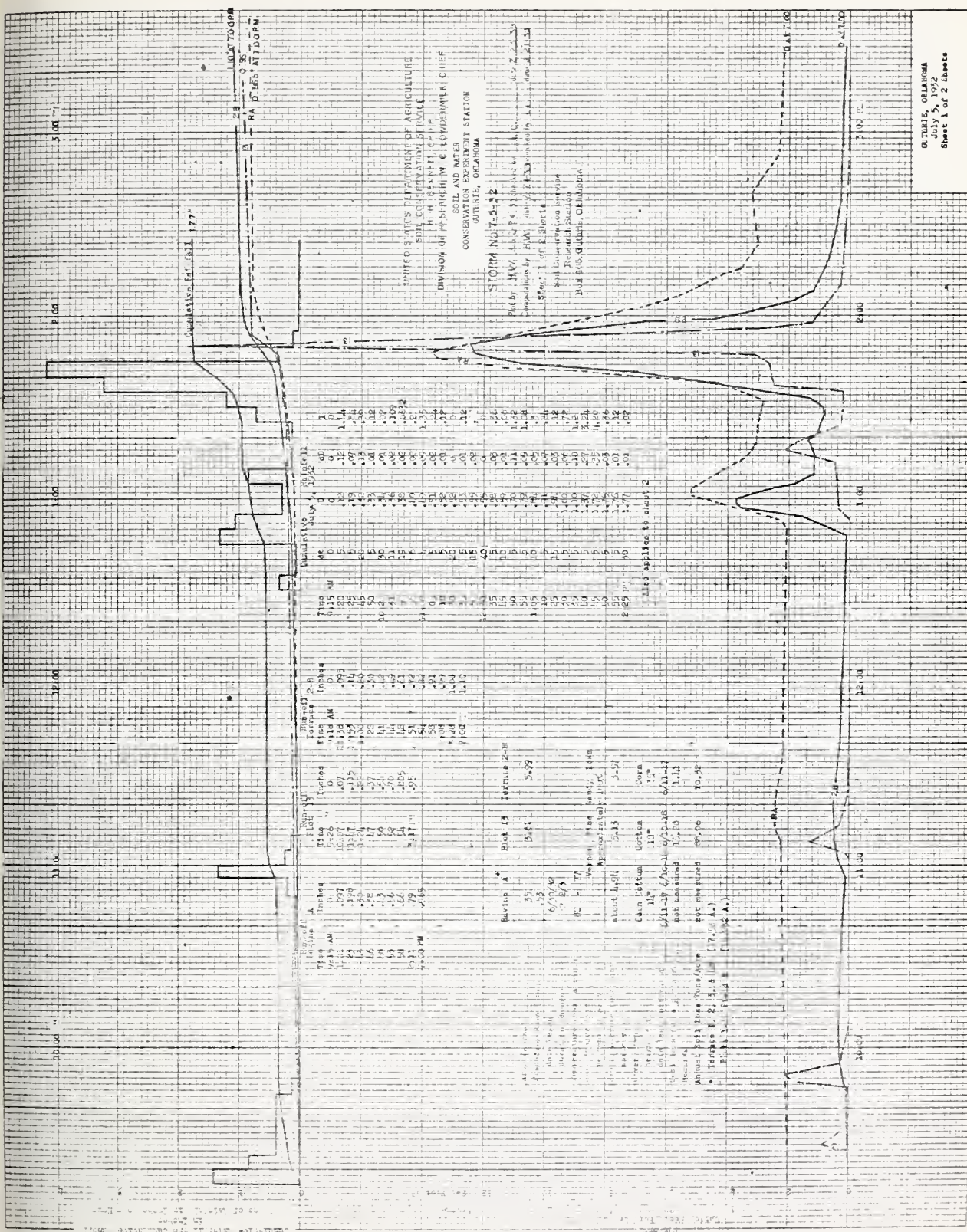
UNITED STATES DEPARTMENT OF AGRICULTURE
 SOIL CONSERVATION SERVICE
 H. H. BENNETT, CHIEF
 DIVISION OF RESEARCH, W. C. LOWMEYER, CHIEF
 SOIL AND WATER
 CONSERVATION EXPERIMENT STATION
 OTTUMBA, ILLINOIS

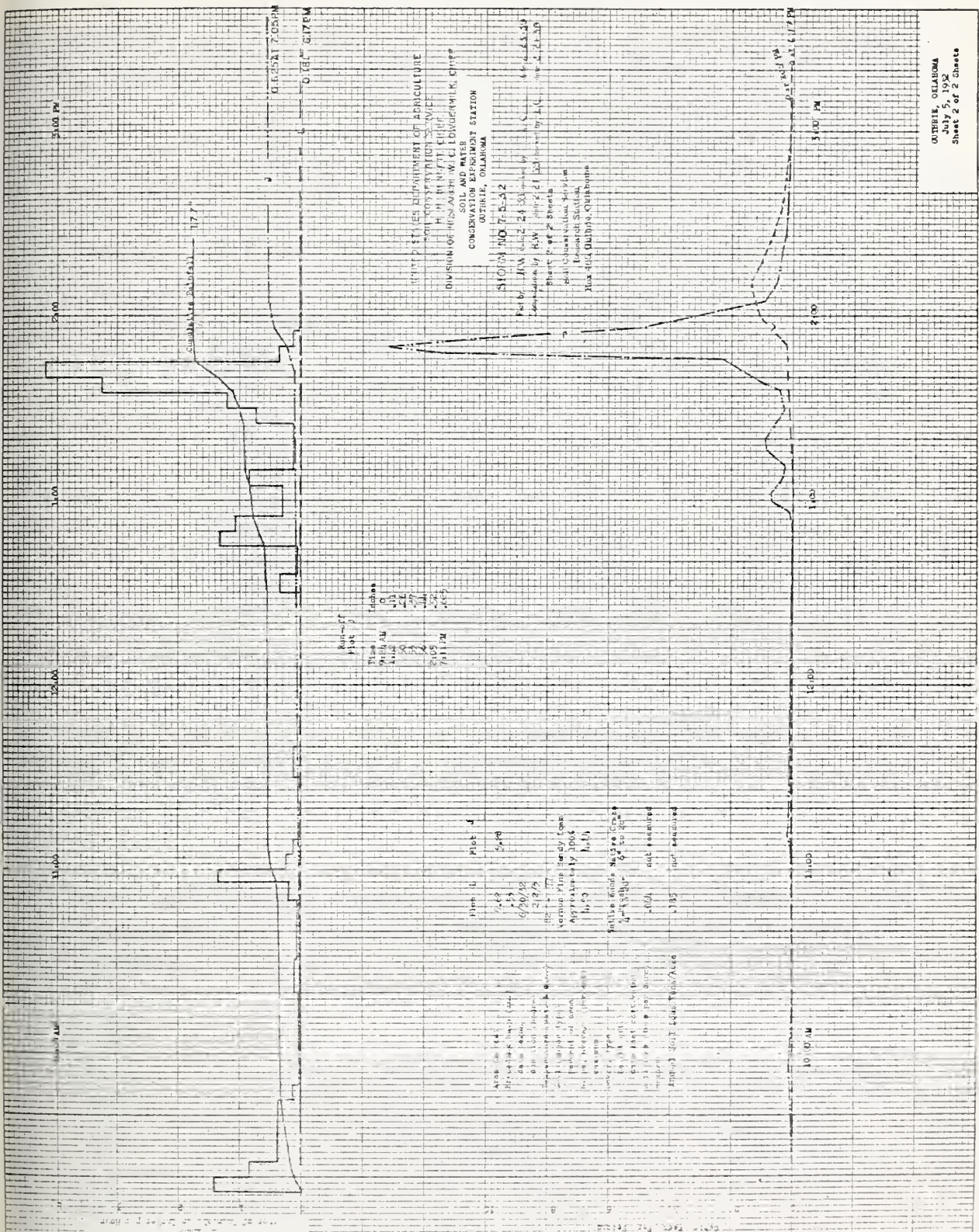
STORM NO. 6/24/22

Plot by U.S. 24/25 checked by J.C. 6/27/22
 Computations by J.C. 6/28/22 checked by J.W. 6/28/22

Sheet 5 of 3 sheets
 Soil Conservation Service
 Research Station
 for the study in Ottumba

5.00 P.M.





Time	Discharge (cfs)
0	0
10	100
20	200
30	300
40	400
50	500
60	600
70	700
80	800
90	900
100	1000

UNITED STATES DEPARTMENT OF AGRICULTURE
 SOIL CONSERVATION SERVICE
 H. H. BENNETT CHIEF
 DIVISION OF HIGH ALTH W. C. LONGFORD, CHIEF
 SOIL AND WATER
 CONSERVATION EXPERIMENT STATION
 OTTUMWA, ILLINOIS

STATION NO. 7-5-32
 Plot No. 177
 Contained by H.W. 177-2-11
 Sheet No. 2 of 2
 Soil Conservation Service
 Research Station
 Ottumwa, Illinois

Plot No.	Plot Date	Plot Time	Plot Discharge (cfs)
177	6/20/32	2:25 PM	850
178	6/20/32	2:25 PM	850
179	6/20/32	2:25 PM	850
180	6/20/32	2:25 PM	850
181	6/20/32	2:25 PM	850
182	6/20/32	2:25 PM	850
183	6/20/32	2:25 PM	850
184	6/20/32	2:25 PM	850
185	6/20/32	2:25 PM	850
186	6/20/32	2:25 PM	850
187	6/20/32	2:25 PM	850
188	6/20/32	2:25 PM	850
189	6/20/32	2:25 PM	850
190	6/20/32	2:25 PM	850
191	6/20/32	2:25 PM	850
192	6/20/32	2:25 PM	850
193	6/20/32	2:25 PM	850
194	6/20/32	2:25 PM	850
195	6/20/32	2:25 PM	850
196	6/20/32	2:25 PM	850
197	6/20/32	2:25 PM	850
198	6/20/32	2:25 PM	850
199	6/20/32	2:25 PM	850
200	6/20/32	2:25 PM	850

RECORD OF SINGLE STORMS AND THEIR RUN-OFFS ON VARIOUS WATERSHEDS

Area (acres)	Cage No	Begin (hour)	Duration (minutes)	Amount (inches)	RAINFALL			TEMPERATURE (degrees F.)		RUN-OFF			Rainfall Meters (inches)	Soil Loss (tons per acre)	CONDITION OF WATERSHED		
					MAXIMUM INTENSITY			Maximum	Minimum	Begin (hour)	Amount (inches)	Maximum Rate					
					5 minutes (inches per hour)	15 minutes (inches per hour)	30 minutes (inches per hour)									Cu ft. sec.	Time
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
10.45 Above Field	6150P	6:50P	10	0.06					79	60							No. 4 Plot L Wooded area - Virgin soil condition
"	6:10P	"	120	0.83	2.16	1.08	0.62	"	87	39	6:53P	1.06A	0.23		10.17	7:51P	3.56
"	"	"	"	"	"	"	"	"	"	"	7:02P	9:57P	0.37		4.86	7:04P	0.25
"	"	"	"	"	"	"	"	"	"	"	6:57P	10:17P	0.24		0.64	7:02P	
"	"	"	"	"	"	"	"	"	"	"	6:51P	9:25P	0.02		0.07	8:15P	
"	"	"	"	"	"	"	"	"	"	"	6:56P	7:08P	0.005		0.25	7:01P	
"	"	"	"	"	"	"	"	"	"	"	7:01P	10:04P	0.19		2.01	7:11P	0.95
"	"	"	"	"	"	"	"	"	"	"	6:58P	9:19P	0.22		2.24	7:51P	1.99
"	"	"	"	"	"	"	"	"	"	"	7:26P	9:13P	0.03		0.15	7:46P	0.01
"	"	"	"	"	"	"	"	"	"	"	7:02P	10:47P	0.08		0.10	8:02P	
"	"	"	"	"	"	"	"	"	"	"	6:55P	10:24P	0.25		0.24	2:06P	0.11
"	9:00P	1:00P	0.25		0.72	0.60	0.34	83	64								No. 6 Terrace 2-B Soil-Vernon Fine Sandy Loam - Eroded Phase
"	9:55P	1:170	0.55		1.68	0.84	0.54	69	59	3:06P	9:19P	0.16			5.53	6:04P	0.56
"	1:00A	370	0.72		"	"	"	"	"	Trace of Run-off	No Run-off						
"	"	"	"	"	"	"	"	"	"	No Run-off	No Run-off						
"	"	"	"	"	"	"	"	"	"	3:07P	8:13P	0.11			1.24	6:09P	0.54
"	"	"	"	"	"	"	"	"	"	2:57P	8:59P	0.31			2.16	6:00P	0.70
"	"	"	"	"	"	"	"	"	"	2:58P	8:11P	0.05			0.10	5:15P	
"	"	"	"	"	"	"	"	"	"	3:25P	8:59P	0.09			0.07	6:14P	
"	"	"	"	"	"	"	"	"	"	No Run-off	No Run-off						Planted to Cowpeas 7/15-17 Cowpeas turned under with one- way plow 9/18-20 Plowed with moldboard plow in December.
"	10:25P	335	0.34					74-61	50-55								
"	12:55P	10	0.03					90	61								
"	10:20A	70	0.08					83	62								
"	12:05A	85	1.61		3.60	2.72	2.16	72	57	12:35A	6:15A	0.90			53.59	1:07A	
"	"	"	"	"	"	"	"	"	"	12:35A	3:10A	0.86			12.01	1:03A	17.90
"	"	"	"	"	"	"	"	"	"	12:38A	4:13A	0.18			3.70	1:07A	1.09
"	"	"	"	"	"	"	"	"	"	1:14A	2:10A	0.02			0.25	1:21A	0.014
"	"	"	"	"	"	"	"	"	"	No Run-off	No Run-off						
"	"	"	"	"	"	"	"	"	"	12:37A	3:44A	0.92			12.30	1:08A	1.19
"	"	"	"	"	"	"	"	"	"	12:33A	4:35A	1.05			10.75	1:08A	0.56
"	"	"	"	"	"	"	"	"	"	12:33A	3:05A	0.69			6.92	1:06A	1.03
"	"	"	"	"	"	"	"	"	"	12:38A	6:35A	0.66			2.03	1:21A	0.56
"	"	"	"	"	"	"	"	"	"	12:33A	4:04A	0.61			0.90	1:06A	0.39
"	2:15P	420	0.28					70	16								Planted to cowpeas 6/16-17 Cowpeas plowed under with one- way disk plow 9/18-26
"	4:20A	275	0.18					78	63								



UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
DIVISION OF RESEARCH

Soil Conservation Service
Research Station
Box 406, Guthrie, Oklahoma

RECORD OF SINGLE STORMS AND THEIR RUN-OFFS ON VARIOUS WATERSHEDS

MONTH January - December, 1933
SHEET 4 OF 5 SHEETS

PROJECT

Date	Watershed	Area (acres)	Gage No.	Begin (hour)	Duration (minutes)	Amount (inches)	RAINFALL			TEMPERATURE (degrees F)			Run-off			Rainfall Meas (inches)	Silt Loss (tons per acre)	Conversion of Watershed	
							8 minutes (inches per hour)	15 minutes (inches per hour)	30 minutes (inches per hour)	Maximum Intensity	Maximum	Minimum	Begin (hour)	End (hour)	Amount (cubic feet)	Maximum Rate (cu. ft. sec.)	Time		
1/23	1	40 Above Field	405A	195	1.61	4.08	2.16	1.74	66	84	66	4:07A	11:52A	0.55	17.44	4:35A	1:06		
1/23	2	"	"	"	"	"	"	"	"	"	"	"	4:12A	6:22A	0.39	4:11	4:16A	1.22	6.10
1/23	3	"	"	"	"	"	"	"	"	"	"	"	4:11A	11:11A	0.52	1:43	4:31A	1.09	0.16
1/23	4	"	"	"	"	"	"	"	"	"	"	"	No Run-off						* Total amount of rainfall based on Standard Gage
1/23	5	"	"	"	"	"	"	"	"	"	"	"	4:20A	12:25P	0.34	0.965	4:50A	1.27	0.10
1/23	6	"	"	"	"	"	"	"	"	"	"	"	4:10A	10:05A	0.64	3.44	4:35A	0.97	Soil loss not measured on Plot J and Ravine A
1/23	7	"	"	"	"	"	"	"	"	"	"	"	4:13A	10:45A	0.77	4:70	4:13A	0.84	0.52
1/23	8	"	"	"	"	"	"	"	"	"	"	"	4:10A	9:32A	0.96	2.40	4:15A	0.65	0.26
1/23	9	"	"	"	"	"	"	"	"	"	"	"	4:15A	12:10P	0.84	1.31	5:05A	0.77	0.10
1/23	10	"	"	"	"	"	"	"	"	"	"	"	4:15A	12:37P	1.00	0.46	4:17A	0.61	E a Estimated
2/3	1	"	"	120	0.15						82	69							
2/3	2	"	12:22P	1395	3.17	1.92	1.60	1.56			80-88	74-66	9:39P	7:19A	1.23	21.94	10:02P	1.94	
2/3	3	"	"	"	"	"	"	"	"	"	"	"	9:47P	1:32A	0.98	6.50	10:05P	2.19	5.93
2/3	4	"	"	"	"	"	"	"	"	"	"	"	9:35P	6:00A	1.01	1.62	1:38A	2.15	0.25
2/3	5	"	"	"	"	"	"	"	"	"	"	"	9:12P	12:27A	0.02	0.15	11:31P	3.15	0.007
2/3	6	"	"	"	"	"	"	"	"	"	"	"	Trace of Run-off						
2/3	7	"	"	"	"	"	"	"	"	"	"	"	9:38P	10:00A	1.38	4.60	10:11P	1.79	0.33
2/3	8	"	"	"	"	"	"	"	"	"	"	"	9:37P	5:00A	1.57	5.23	10:05P	1.60	0.63
2/3	9	"	"	"	"	"	"	"	"	"	"	"	9:37P	4:51A	1.77	2.57	10:11P	1.40	0.24
2/3	10	"	"	"	"	"	"	"	"	"	"	"	9:43P	9:59A	2.04	1.66	11:59P	1.13	0.11
2/3	11	"	"	"	"	"	"	"	"	"	"	"	9:39P	8:25A	1.72	0.70	11:35P	1.45	0.13
2/3	12	"	4:25A	125	0.06														
2/3	13	"	12:30P	60	0.12														
2/3	14	"	"	"	"	"	"	"	"	"	"	"							
2/3	15	"	"	"	"	"	"	"	"	"	"	"	12:58A	10:18A	1.22	35.53	3:31A	1.53	
2/3	16	"	"	"	"	"	"	"	"	"	"	"	12:55A	4:18A	0.79	4.60	3:20A	2.01	9.30
2/3	17	"	"	"	"	"	"	"	"	"	"	"	12:12A	9:12A	1.36	2.85	3:32A	1.44	0.76
2/3	18	"	"	"	"	"	"	"	"	"	"	"	3:20A	5:21A	0.05	0.88	3:21A	2.75	
2/3	19	"	"	"	"	"	"	"	"	"	"	"	1:10A	9:50A	0.62	4.31	3:56A	2.18	
2/3	20	"	"	"	"	"	"	"	"	"	"	"	12:53A	8:00A	1.18	6.80	3:38A	1.62	0.95
2/3	21	"	"	"	"	"	"	"	"	"	"	"	12:49A	8:52A	1.20	7.51	3:57A	1.60	1.59
2/3	22	"	"	"	"	"	"	"	"	"	"	"	12:54A	9:26A	1.56	3.26	3:51A	1.24	0.19
2/3	23	"	"	"	"	"	"	"	"	"	"	"	12:58A	10:00A	1.73	2.23	4:35A	1.07	0.09
2/3	24	"	"	"	"	"	"	"	"	"	"	"	11:53P	9:09A	1.74	1.03	4:35A	1.06	0.18
3/11-12	1	"	2:00P	840	0.09						55-54	52-52							
3/11-12	2	"	"	"	"	"	"	"	"	"	"	"							
3/11-12	3	"	"	"	"	"	"	"	"	"	"	"							
3/11-12	4	"	"	"	"	"	"	"	"	"	"	"							
3/11-12	5	"	"	"	"	"	"	"	"	"	"	"							
3/11-12	6	"	"	"	"	"	"	"	"	"	"	"							
3/11-12	7	"	"	"	"	"	"	"	"	"	"	"							
3/11-12	8	"	"	"	"	"	"	"	"	"	"	"							
3/11-12	9	"	"	"	"	"	"	"	"	"	"	"							
3/11-12	10	"	"	"	"	"	"	"	"	"	"	"							
3/11-12	11	"	1:10P	1090	1.27	3.60	1.68	0.92			62-67	54-59	3:53P	6:15P	0.07	7.65	3:56P	1.20	
3/11-12	12	"	"	"	"	"	"	"	"	"	"	"	Trace of Run-off						
3/11-12	13	"	"	"	"	"	"	"	"	"	"	"	Trace of Run-off						
3/11-12	14	"	"	"	"	"	"	"	"	"	"	"	No Run-off						

MONTH January - December, 1933
SHEET 5 OF 5 SHEETS

RECORD OF SINGLE STORMS AND THEIR RUN-OFFS ON VARIOUS WATERSHEDS

SHEET 5 OF 5 SHEETS

WATERSHED		RAINFALL				TEMPERATURE (degrees F)			RUN-OFF				RAINFALL MINUS (inches)	Run Load (tons per acre)		
Number	Area (acres)	Usage (cfs)	Head (feet)	Discharge (cubic feet)	Amount (inches)	MAXIMUM INTENSITY			Began (hour)	Ended (hour)	Amount (inches)	MAXIMUM RATE	Time	(17)	(18)	
						5 minutes (inches per hour)	15 minutes (inches per hour)	30 minutes (inches per hour)								
(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
10/10-15	As Above	Field	1.10P	1050	1.27	3.60	1.68	0.92	62-67	51-59	Trace of Run-off	Trace of Run-off	3.17	3.36P	1.04	0.31
10/10-15	As Above	Field	1.10P	1050	1.27	3.60	1.68	0.92	62-67	51-59	Trace of Run-off	Trace of Run-off	3.17	3.36P	1.04	0.31
10/10-15	As Above	Field	1.10P	1050	1.27	3.60	1.68	0.92	62-67	51-59	Trace of Run-off	Trace of Run-off	3.17	3.36P	1.04	0.31
10/10-15	As Above	Field	1.10P	1050	1.27	3.60	1.68	0.92	62-67	51-59	Trace of Run-off	Trace of Run-off	3.17	3.36P	1.04	0.31
10/10-15	As Above	Field	1.10P	1050	1.27	3.60	1.68	0.92	62-67	51-59	Trace of Run-off	Trace of Run-off	3.17	3.36P	1.04	0.31
10/10-15	As Above	Field	1.10P	1050	1.27	3.60	1.68	0.92	62-67	51-59	Trace of Run-off	Trace of Run-off	3.17	3.36P	1.04	0.31
10/10-15	As Above	Field	1.10P	1050	1.27	3.60	1.68	0.92	62-67	51-59	Trace of Run-off	Trace of Run-off	3.17	3.36P	1.04	0.31
10/10-15	As Above	Field	1.10P	1050	1.27	3.60	1.68	0.92	62-67	51-59	Trace of Run-off	Trace of Run-off	3.17	3.36P	1.04	0.31
10/10-15	As Above	Field	1.10P	1050	1.27	3.60	1.68	0.92	62-67	51-59	Trace of Run-off	Trace of Run-off	3.17	3.36P	1.04	0.31
10/10-15	As Above	Field	1.10P	1050	1.27	3.60	1.68	0.92	62-67	51-59	Trace of Run-off	Trace of Run-off	3.17	3.36P	1.04	0.31
10/10-15	As Above	Field	1.10P	1050	1.27	3.60	1.68	0.92	62-67	51-59	Trace of Run-off	Trace of Run-off	3.17	3.36P	1.04	0.31
10/10-15	As Above	Field	1.10P	1050	1.27	3.60	1.68	0.92	62-67	51-59	Trace of Run-off	Trace of Run-off	3.17	3.36P	1.04	0.31
10/10-15	As Above	Field	1.10P	1050	1.27	3.60	1.68	0.92	62-67	51-59	Trace of Run-off	Trace of Run-off	3.17	3.36P	1.04	0.31
10/10-15	As Above	Field	1.10P	1050	1.27	3.60	1.68	0.92	62-67	51-59	Trace of Run-off	Trace of Run-off	3.17	3.36P	1.04	0.31
10/10-15	As Above	Field	1.10P	1050	1.27	3.60	1.68	0.92	62-67	51-59	Trace of Run-off	Trace of Run-off	3.17	3.36P	1.04	0.31
10/10-15	As Above	Field	1.10P	1050	1.27	3.60	1.68	0.92	62-67	51-59	Trace of Run-off	Trace of Run-off	3.17	3.36P	1.04	0.31
10/10-15	As Above	Field	1.10P	1050	1.27	3.60	1.68	0.92	62-67	51-59	Trace of Run-off	Trace of Run-off	3.17	3.36P	1.04	0.31
10/10-15	As Above	Field	1.10P	1050	1.27	3.60	1.68	0.92	62-67	51-59	Trace of Run-off	Trace of Run-off	3.17	3.36P	1.04	0.31
10/10-15	As Above	Field	1.10P	1050	1.27	3.60	1.68	0.92	62-67	51-59	Trace of Run-off	Trace of Run-off	3.17	3.36P	1.04	0.31
10/10-15	As Above	Field	1.10P	1050	1.27	3.60	1.68	0.92	62-67	51-59	Trace of Run-off	Trace of Run-off	3.17	3.36P	1.04	0.31
10/10-15	As Above	Field														

Went to we have 1.5 inches runoff in inches
 1.5 inches runoff in inches per hour

8:00 AM

6:00

7:00

8:00

9:00

10:00 AM

March 3, 1933

Crabtree Point - 2:16 - 4:30 PM

Point 5th intensity

Station A - 0:30 at 7:40 PM

Station B - 0:30 at 7:33 PM

Point 11 - 0:40 at 8:16 AM

(continued from sheet 1)

Time	Alt	D	Alt	I
3:53	51.00	30	1.61	.02
6:10	60	1.43	.22	.02
7:30	45	1.35	.02	.03
8:15	30	1.28	.07	.09
9:00	30	2.0	.02	.04
12:00	45	2.05	.05	.77
12:00	120	2.06	.01	.02
1:00	120	2.08	.02	.02
3:00	120	2.16	.08	.04

Point A

Station B

Station B - 0:40 at 7:33 PM

Station A - 0:40 at 7:40 PM

Point 13

6:00

7:00

8:00

9:00

10:00 AM

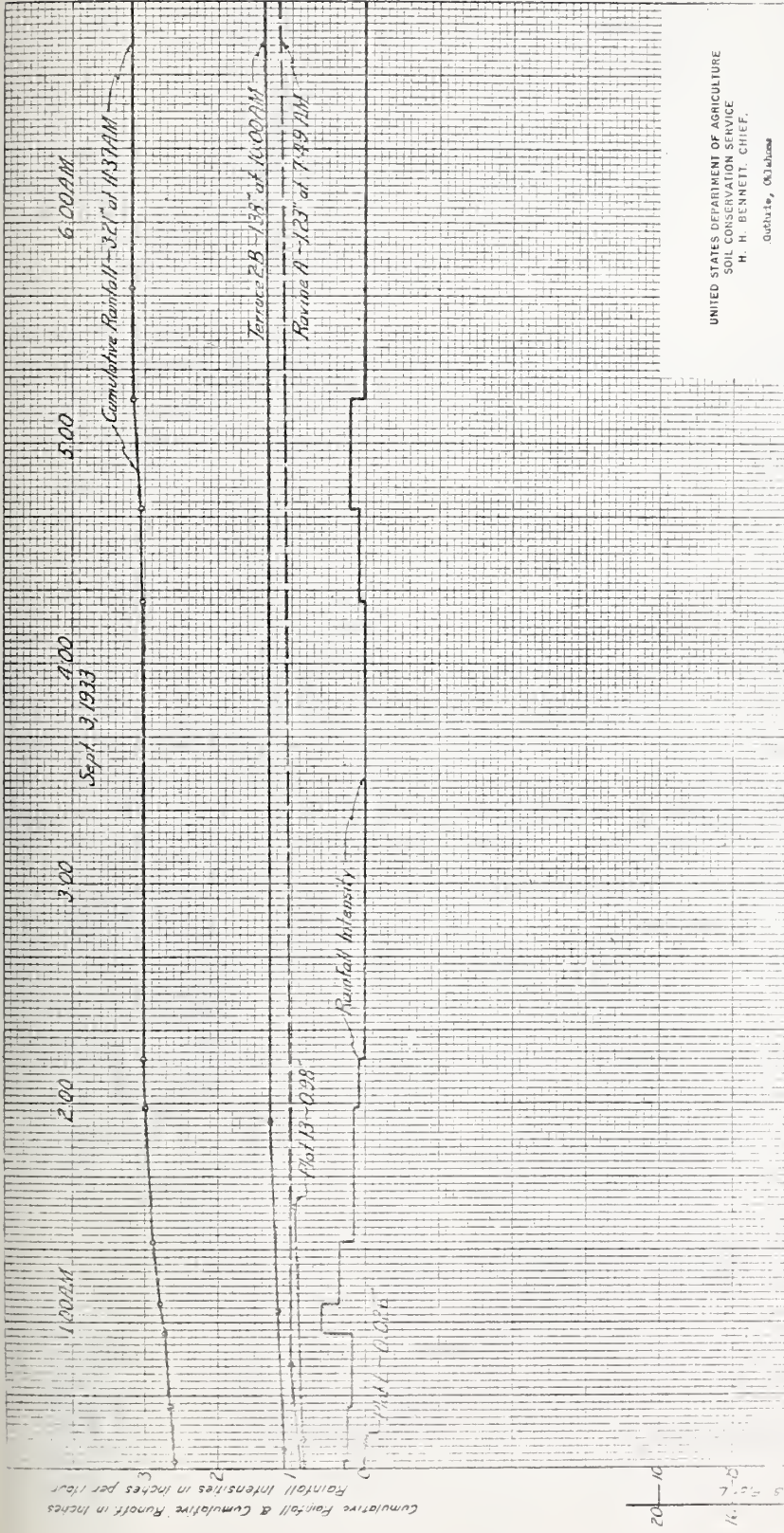
UNITED STATES DEPARTMENT OF AGRICULTURE
 SOIL CONSERVATION SERVICE
 H. H. BENNETT, CHIEF.

Ocala, Alabama

STORM NO. 3-53

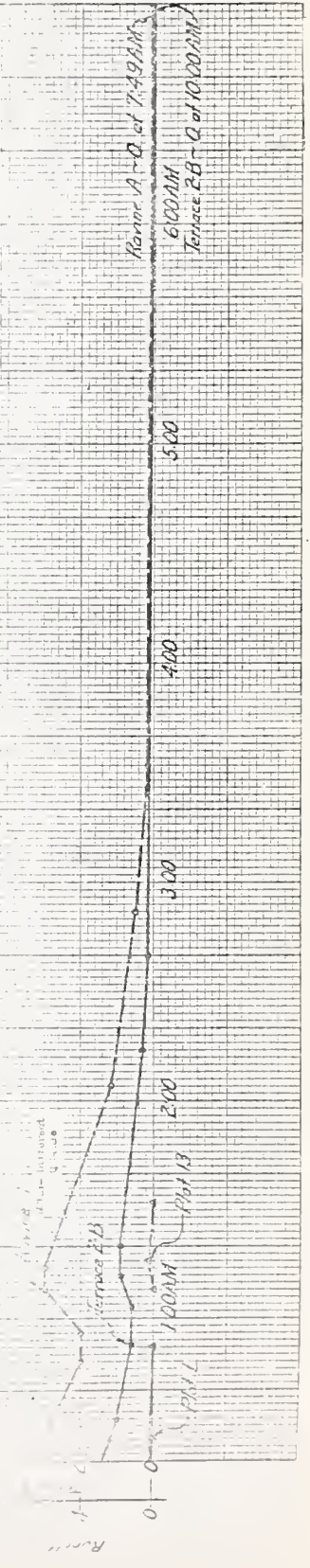
Plot by H.H. Bennett, 1933, for 1933
 Completed by H.H. Bennett, 1933





UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
H. H. BENNETT, CHIEF
Guthrie, Oklahoma

STORM NO. 9-2523
File by 1-32, date 3-1-33, plotted by E.Y. under 2-17-33
Computations by K.S. under 3-1-33 checked by J.Y. under 3-1-33





Soil Conservation Service
Research Station
Box 465, Guthrie, Oklahoma

RECORD OF SINGLE STORMS AND THEIR RUN-OFFS ON VARIOUS WATERSHEDS

Month January - December, 1934
SHEET 1 OF 5 SHEETS

Date	Number	Area (acres)	Gage No.	Peak (feet)	Duration (minutes)	Amount (inches)	MAXIMUM INTENSITY			TEMPERATURE (degrees F.)		Haze (foot)	Rained (hour)	Amount (inches)	MAXIMUM RATE		Runoff (cfs)	Soil Loss (tons per acre)	Condition of Watershed
							6 columns (inches per hour)	15 minutes (inches per hour)	30 minutes (inches per hour)	Maximum	Minimum				Cu. ft. sec.	Time			
1/2-3	1	35	Field	10:50A	1350	0.70	0.72	0.40	0.34	31-34	22-29								Ravine A - Watched No. 1
	2	3.21																	Plot 13
	3	3.13																	15A
	4	5.62																	1
	5	5.28																	1
	6	5.99																	Terrace 2B
	7	5.67																	3B
	8	2.85																	3C
	9	2.58																	5C
	10	1.20																	6B
	11	2.50																	Pasture
1/6-7	11	As Above																	No. 1 Ravine A
2/1				4:10P	315	0.90	0.72	0.48	0.36	31	31-28								Soil-Vernon fine sandy loam
2/17-18				6:20P	200	0.14	0.72	0.52	0.36	49	35								Average land slope 1.94%
2/24				6:20P	210	0.69	0.96	0.72	0.48	51-38	39-36								Approximately 32 acres cultivated
3/1				3:40A	60	0.04													3 acres road and drainage ditch
3/25-26				11:20A	425	0.57	0.24	0.16	0.16	39	36								See 2 and 3-B for field operations
3/30				12:30A	1550	0.26				42	32								
4/1				5:55A	265	0.35	0.48	0.24	0.20	41	37								
4/14				5:30A	355	0.53	1.20	0.80	0.44	61	58								
4/15-46				7:15P	450	0.68	1.20	0.76	0.48	72	55								
4/15				2:45A	80	0.10				61	58								
4/17				12:50P	15	0.03				55	48								No. 2 Plot 13
4/18				5:25A	20	0.04				66	51								Soil-Vernon fine sandy loam
4/21				12:50A	15	0.07				63	51								Eroded phase
5/2				7:10A	90	0.13				59	59								Average land slope 5.13%
5/3	1			7:05A	120	2.34	3.36	3.00	2.18	68	59				47.27	1:47P			Unterraced
	2														9.27	1:42P	22.73		Plowed with moldboard 3/20-28
	3														1.84	1:45P	0.22		Disk 4/24
	4														0.64	1:36P	0.22		Cotton planted 4/25-26
	5														6.44	1:40P	0.007		Cultivated 5/18, 5/21, 5/28, and 6/13
	6														13.33	1:45P	1.90		Wheat cover crop drilled 10/10-11
	7														8.63	1:52P	1.97		
	8														4.20	1:41P	1.43		
	9														1.84	2:17P	0.55		No. 3 Plot 15A
	10														0.97	1:48P	0.26		Soil-Vernon fine sandy loam
	11														0.50		0.50		Eroded phase
5/10	1			6:15A	275	1.39	1.44	1.20	0.96	71	67				8.16	6:11P	1.15		Average land slope 3.42%
	2														2.73	8:28A	3.31		Field operations same as for Plot 13
	3														0.14	8:24A	0.01		
	4														0.18	8:29A	1.36		
	5														0.02		1.36		



RECORD OF SINGLE STORMS AND THEIR RUN-OFFS ON VARIOUS WATERSHEDS

Project
Research Station
Tas, Guthrie, Oklahoma

Date	Number	Area (Acres)	Shape	Peak (Hour)	Duration (minutes)	Amount (Inches)	Maximum Intensity			Temperature (degrees F)		Run-off		Rainfall (Inches)	Run-off (Cfs)	Run-off (Cfs per acre)	Comments
							8 minutes (Inches per hour)	15 minutes (Inches per hour)	30 minutes (Inches per hour)	Maximum	Minimum	Amount (Inches)	Time (Hours)				
5/10	# 6	As Above	Field	6:15A	275	1.38	1.44	1.20	0.96	71	67	0.67	4:01	8:31A	0.71	0.73	No. 4 Plot L
"	# 7	"	"	"	"	"	"	"	"	"	"	0.57	3:17	8:31A	0.85	0.73	Wooded area - Virgin soil
"	# 8	"	"	"	"	"	"	"	"	"	"	0.37	0.71	8:25A	1.01	0.08	condition
"	# 9	"	"	"	"	"	"	"	"	"	"	0.60	0.46	9:01A	0.78	0.06	Cover - Native Woods and Brush
"	# 10	"	"	"	"	"	"	"	"	"	"	0.15	0.12	8:35A	1.23		(Undisturbed)
"	# 11	"	"	"	"	"	"	"	"	"	"	No Run-off					Average land slope 4.80%
5/13	# 1-#11	"	"	"	5	0.02				71	65						No. 5 Plot J
5/14	"	"	"	9:30A	220	0.05				56	52						Soil-Vernon fine sandy loam
5/23	"	"	"	1:10P	65	0.04				78	64						Badly pulled and eroded
6/4	"	"	"	4:05A	215	0.16	0.84	0.36	0.31	84	65						Average land slope 4.44%
6/11	"	"	"	9:30P	180	0.26	1.68	0.96	0.58	91	64						Cover-Native Grass
6/13	"	"	"	1:10A	75	0.17	0.96	0.10	0.32	89	67						
6/16	# 1	"	"	8:30P	329	1.90	2.40	2.14	2.24	94	65	0.58	38.35	9:20P	1.32		No. 6 Terrace 2-8
"	# 2	"	"	"	"	"	"	"	"	"	"	0.26	6.00	9:09P	1.37	15.21	Soil-Vernon fine sandy loam -
"	# 3	"	"	"	"	"	"	"	"	"	"	0.26	1.93	9:17P	1.64	0.15	Eroded phase
"	# 4	"	"	"	"	"	"	"	"	"	"	0.01	0.20	9:11P	1.89		Average land slope 2.79%
"	# 5	"	"	"	"	"	"	"	"	"	"	0.16	2.30	9:16P	1.74		Vertical spacing 3.99 ft.
"	# 6	"	"	"	"	"	"	"	"	"	"	1.09	10.61	9:17P	0.81	1.17	Grade variable 0" to 4"
"	# 7	"	"	"	"	"	"	"	"	"	"	0.90	7.51	9:35P	1.00	1.26	Cultivated to prevent blowing
"	# 8	"	"	"	"	"	"	"	"	"	"	0.59	1.79	9:30P	1.31	0.22	14/10
"	# 9	"	"	"	"	"	"	"	"	"	"	0.58	1.07	9:35P	1.32	0.09	Disked 14/27-28
"	# 10	"	"	"	"	"	"	"	"	"	"	0.71	0.94	9:24P	1.19	0.47	Cotton planted 4/27-28
"	# 11	"	"	"	"	"	"	"	"	"	"	No Run-off					Cultivated 5/15 and 5/19
6/21	# 1-#11	"	"	"	"	"	"	"	"	"	"						Wheat cover crop drilled in
7/1	"	"	"	4:10A	10	0.03				96	72						cotton 9/25 - 10/6
8/13	"	"	"	7:15A	150	0.06				92	76						No. 7 Terrace 3-8
8/22	# 1	"	"	12:15A	505	4.15	4.80	3.08	3.00	89	65	0.97	23.12	3:00A	3.13		Soil-Vernon fine sandy loam -
"	# 2	"	"	"	"	"	"	"	"	"	"	0.59	1.81	1:00A	3.56	18.21	Eroded phase
"	# 3	"	"	"	"	"	"	"	"	"	"	0.79	1.93	3:01A	3.36	0.23	Average land slope 4.21%
"	# 4	"	"	"	"	"	"	"	"	"	"	0.02	0.12	3:00A	4.13		Vertical spacing 3.415 ft.
"	# 5	"	"	"	"	"	"	"	"	"	"	0.17	0.77	12:57A	3.98		Grade variable 0" to 6"
"	# 6	"	"	"	"	"	"	"	"	"	"	1.11	5.23	1:13A	3.04	0.92	Cultivated to prevent blowing
"	# 7	"	"	"	"	"	"	"	"	"	"	0.97	4.50	3:01A	3.18	1.25	14/11
"	# 8	"	"	"	"	"	"	"	"	"	"	0.68	1.64	3:05A	3.17	0.26	Disked 4/27-28
"	# 9	"	"	"	"	"	"	"	"	"	"	0.70	0.88	3:19A	3.15	1.25	Cotton planted 4/30 and 5/1
"	# 10	"	"	"	"	"	"	"	"	"	"	1.24	0.87	3:05A	2.81	0.14	Cultivated 5/16 and 5/19
"	# 11	"	"	"	"	"	"	"	"	"	"	No Run-off					Wheat cover crop drilled in
8/22-23	# 1	"	"	11:30P	510	1.64	3.18	1.68	1.16	89	65	0.93	36.94	12:10A	0.71	15.66	cotton 9/25 - 10/6
"	# 2	"	"	"	"	"	"	"	"	"	"	0.66	9.27	12:35A	0.98		1/ Taken from No. 8 Page.



NOTES READING
Research Station

RECORD OF SINGLE STORMS AND THEIR RUN-OFFS ON VARIOUS WATERSHEDS

MONTH January - December, 1934
SHEET 3 OF 5 SHEETS

Date	WATERED			RAINFALL					TEMPERATURE (degree F.)		HURD			HURDALL Meters (inches)	But Loss (long per acre)	Comments or Remarks		
	Number	Area (acres)	Uage No.	Rise (hour)	Direction (station)	Maximum Irrigation			Maximum	Minimum	Begin (hour)	End (hour)	Amount (inches)				Measure Rate	
						4 minutes (inches per hour)	14 minutes (inches per hour)	30 minutes (inches per hour)									On. ft. sec.	Time
1934	(1)																	
B/2-23	# 3	As Above	Field #1130P	510	1.04	3.10	1.68	1.16	89	65	12:00M	10:10A	0.85	3.11	12:12A	0.79	No. 8 Terrace 3-C Soil-Vernon fine sandy loam Average land slope 4.33% Vertical spacing 3.51 ft. Grade 6" per 100 ft. Disted 2/11 Oats planted 2/16 Oats harvested 6/11-12 Plowed with one-way disk 6/27-28	
	# 4	"	"	"	"	"	"	"	"	"	11:59P	3:30A	0.23	4.60	12:15A	1.61		
	# 5	"	"	"	"	"	"	"	"	"	11:36P	7:00A	0.94	7.39	12:14A	0.70		
	# 6	"	"	"	"	"	"	"	"	"	11:39P	5:02A	0.86	7.27	12:11A	0.78		
	# 7	"	"	"	"	"	"	"	"	"	11:26P	5:38A	0.76	2.90	12:13A	0.88		
	# 8	"	"	"	"	"	"	"	"	"	11:53P	7:27A	0.74	1.75	12:52A	0.90		
	# 9	"	"	"	"	"	"	"	"	"	11:53P	7:54A	0.98	1.13	12:11A	0.66		
	# 10	"	"	"	"	"	"	"	"	"	No Run-off							
	# 11	"	"	"	"	"	"	"	"	"	No Run-off							
B/25	# 1	"	1:30A	345	1.07	1.14	0.76	0.66	67	56	3:15A	10:15A	0.34	9.65	3:35A	0.73	Compeas plowed in August Compeas planted under in October	
	# 2	"	"	"	"	"	"	"	"	"	3:10A	9:22A	0.51	1.57	3:52A	0.56		
	# 3	"	"	"	"	"	"	"	"	"	3:03A	8:52A	0.18	0.27	3:10A	0.89		
	# 4	"	"	"	"	"	"	"	"	"	3:30A	6:38A	0.011	0.03	3:40A	1.06	No. 9 Terrace 5-C Soil-Vernon fine sandy loam Average land slope 4.72% Vertical spacing 3.13 ft. Grade 2" per 100 ft. Field operations same as for Terrace 3-C	
	# 5	"	"	"	"	"	"	"	"	"	3:20A	7:15A	0.04	0.077	4:30A	1.03		
	# 6	"	"	"	"	"	"	"	"	"	2:57A	8:19A	0.19	2.18	3:14A	0.58		
	# 7	"	"	"	"	"	"	"	"	"	3:00A	8:50A	0.39	2.16	3:30A	0.68		
	# 8	"	"	"	"	"	"	"	"	"	2:55A	8:10A	0.32	0.82	3:10A	0.75		
	# 9	"	"	"	"	"	"	"	"	"	3:24A	10:19A	0.28	0.25	5:00A	0.79		
	# 10	"	"	"	"	"	"	"	"	"	3:05A	11:55A	0.41	0.22	3:35A	0.66		
	# 11	"	"	"	"	"	"	"	"	"	No Run-off							
9/1	# 1	"	8:20A	1125	2.52	3.63	2.42	1.88	79	67	9:18A	2:13A	1.24	15.74	10:08A	1.28	No. 10 Terrace 6-E Soil-Vernon fine sandy loam Average land slope 4.95% Vertical spacing 4.00 ft. Field operations same as for Plot 13.	
	# 2	"	"	"	"	"	"	"	"	"	9:15A	11:25P	1.53	15.30	9:55A	0.99		
	# 3	"	"	"	"	"	"	"	"	"	9:20A	1:55A	0.98	3.70	9:55A	1.51		
	# 4	"	"	"	"	"	"	"	"	"	9:18A	11:24A	0.047	0.29				

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
DIVISION OF RESEARCH

MONTH January - December, 19 34
SHEET 5 OF 5 SHEETS

Soil Conservation Service
Research Station
Project # 85, Guthrie, Oklahoma

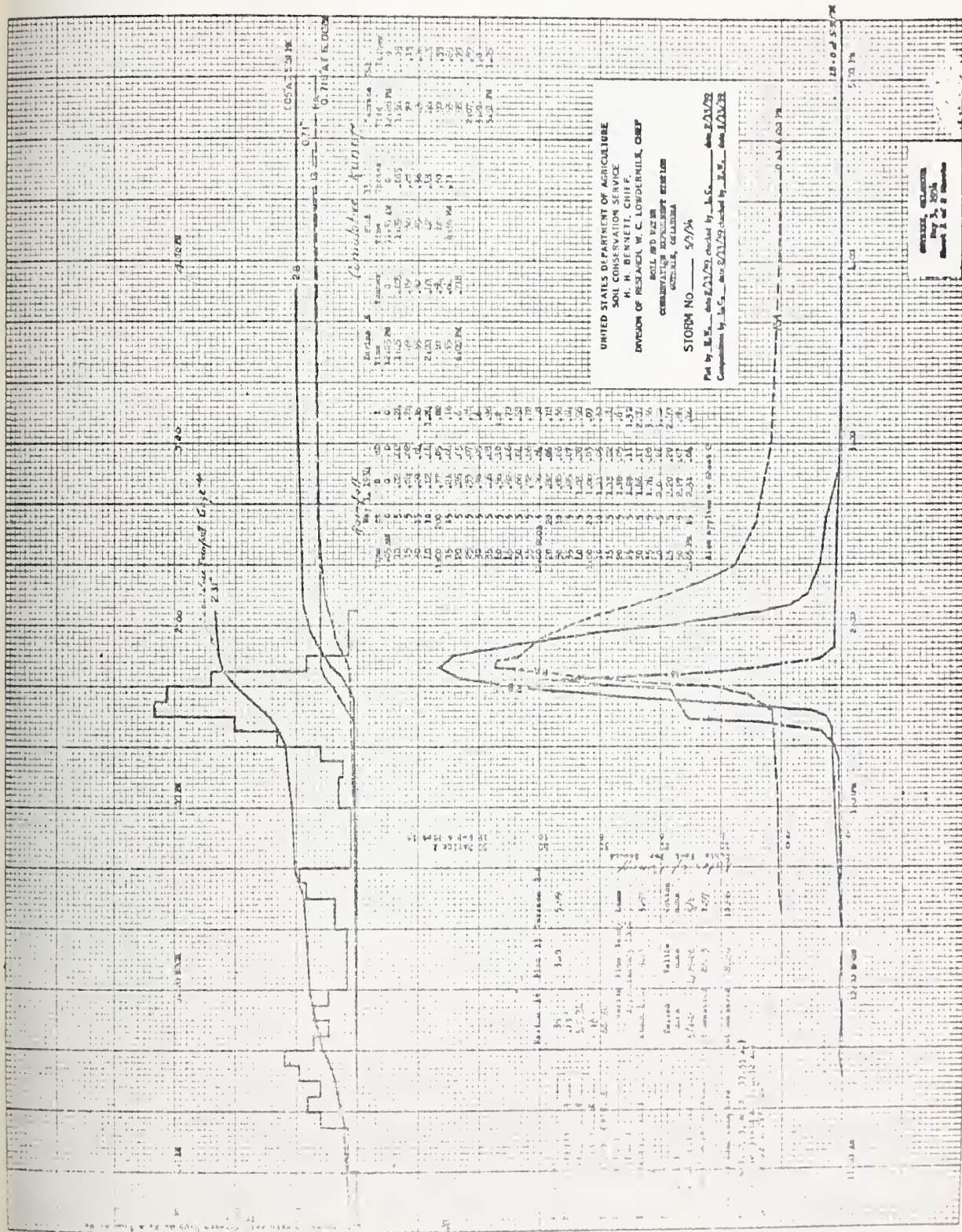
RECORD OF SINGLE STORMS AND THEIR RUN-OFFS ON VARIOUS WATERSHEDS

DATE	WATERSHED		RAINFALL						TEMPERATURE (degrees F.)		RUN-OFF				Run-off MINUTES (inches)	Soil Loss (tons per acre)	COMMENTS OF WATERSHED
	Number	Area (acres)	Shape No.	Begin (hour)	Duration (minutes)	Amount (inches)	MAXIMUM INTENSITY			Maximum	Minimum	Begin (hour)	Ended (hour)	Amount (inches)	MAXIMUM RATE		
							8 minutes (inches per hour)	15 minutes (inches per hour)	30 minutes (inches per hour)						Cu. ft. sec.	Time	
12/14	(1)																(19)
10/24	# 7	As Above	Fletch	2:25A	10	0.37	3.36	1.32	0.74	59	57	2:27A	7:20A	0.18	1.57	2:39A	0.19
"	# 8	"	"	"	"	"	"	"	"	"	"	2:27A	4:16A	0.14	1.79	2:34A	0.21
"	# 9	"	"	"	"	"	"	"	"	"	"	2:28A	5:58A	0.12	0.61	2:13A	0.03
"	# 10	"	"	"	"	"	"	"	"	"	"	No Run-off					
"	# 11	"	"	"	"	"	"	"	"	"	"	No Run-off					
11/2-3	# 1-11	"	"	9:55P	635	0.20	0.36	0.28	0.16	64-74	38-47						Soil Loss not measured on Plot J and Ravine A
11/15	"	"	"	"	"	0.08	"	"	"	63	46						
11/19	# 1	"	"	6:05A	190	1.11	1.32	0.72	0.40	66	65	11:01A	2:16P	0.01	0.11	11:06A	1.10
"	# 2	"	"	"	"	"	"	"	"	"	"	6:06A	4:26P	0.02	0.66	8:19A	1.09
"	# 3	"	"	"	"	"	"	"	"	"	"	No Run-off					* Total amount of rainfall based on Standard Gage
"	# 4	"	"	"	"	"	"	"	"	"	"	No Run-off					E Estimated
"	# 5	"	"	"	"	"	"	"	"	"	"	No Run-off					
"	# 6	"	"	"	"	"	"	"	"	"	"	No Run-off					
"	# 7	"	"	"	"	"	"	"	"	"	"	6:02A	3:31P	0.26	0.255	8:50A	0.85
"	# 8	"	"	"	"	"	"	"	"	"	"	No Run-off					0.03
"	# 9	"	"	"	"	"	"	"	"	"	"	No Run-off					
"	# 10	"	"	"	"	"	"	"	"	"	"	No Run-off					
"	# 11	"	"	"	"	"	"	"	"	"	"	No Run-off					
11/21-22	# 1	"	"	8:05A	1405	1.85	0.24	0.22	0.22	52-16	48-32	12:11P	7:05A	0.50	3.08	7:15P	1.35
"	# 2	"	"	"	"	"	"	"	"	"	"	11:01A	9:56P	0.812	0.299	2:145P	1.01
"	# 3	"	"	"	"	"	"	"	"	"	"	2:02P	11:02P	0.13	0.12	6:57P	0.95
"	# 4	"	"	"	"	"	"	"	"	"	"	11:28A	1:11A	0.07	0.045	4:24P	0.01
"	# 5	"	"	"	"	"	"	"	"	"	"	No Run-off					
"	# 6	"	"	"	"	"	"	"	"	"	"	11:52A	9:00A	0.91	0.66	4:30P	0.13
"	# 7	"	"	"	"	"	"	"	"	"	"	11:05A	8:34A	1.19	0.77	5:35P	0.21
"	# 8	"	"	"	"	"	"	"	"	"	"	2:32P	12:57A	0.15	0.15	7:07P	0.04
"	# 9	"	"	"	"	"	"	"	"	"	"	5:00P	3:30A	0.10	0.06	9:00P	0.01
"	# 10	"	"	"	"	"	"	"	"	"	"	2:10LP	1:34A	0.53	0.10	6:00P	0.06
"	# 11	"	"	"	"	"	"	"	"	"	"	No Run-off					
11/24	# 1-11	"	"	1:35P	100	0.08				50	44						
11/29	"	"	"	11:10A	503	0.12				42	39						
12/10	"	"	"	7:15A	675	0.75	0.96	0.56	0.40	13	28						

Soil Loss not measured on
Plot J and Ravine A

* Total amount of rainfall
based on Standard Gage

E Estimated

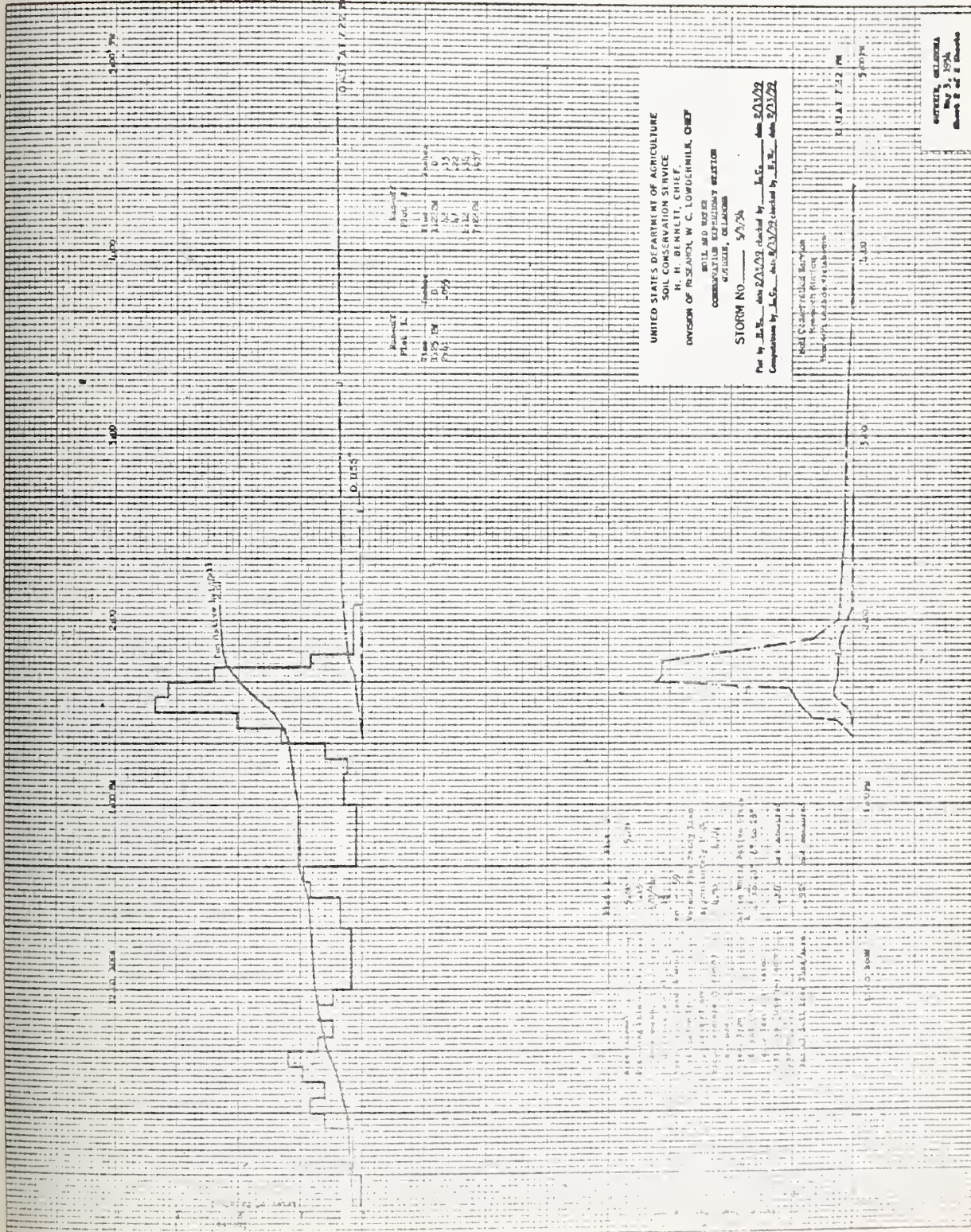


UNITED STATES DEPARTMENT OF AGRICULTURE
 SOIL CONSERVATION SERVICE
 H. H. BENNETT, CHIEF
 DIVISION OF RESEARCH, W. C. LOWDERMILK, CHIEF
 SOIL AND WATER
 CONSERVATION RESEARCH STATION
 COLUMBIA, MISSOURI

STORM NO. 5074

Plot by H. H. Bennett, 2/1/29, checked by J. C. Bennett, 2/1/29
 Computed by J. C. Bennett, 2/1/29, checked by H. H. Bennett, 2/1/29

ORIGINAL RECORD
 May 1, 1934
 checked by J. C. Bennett

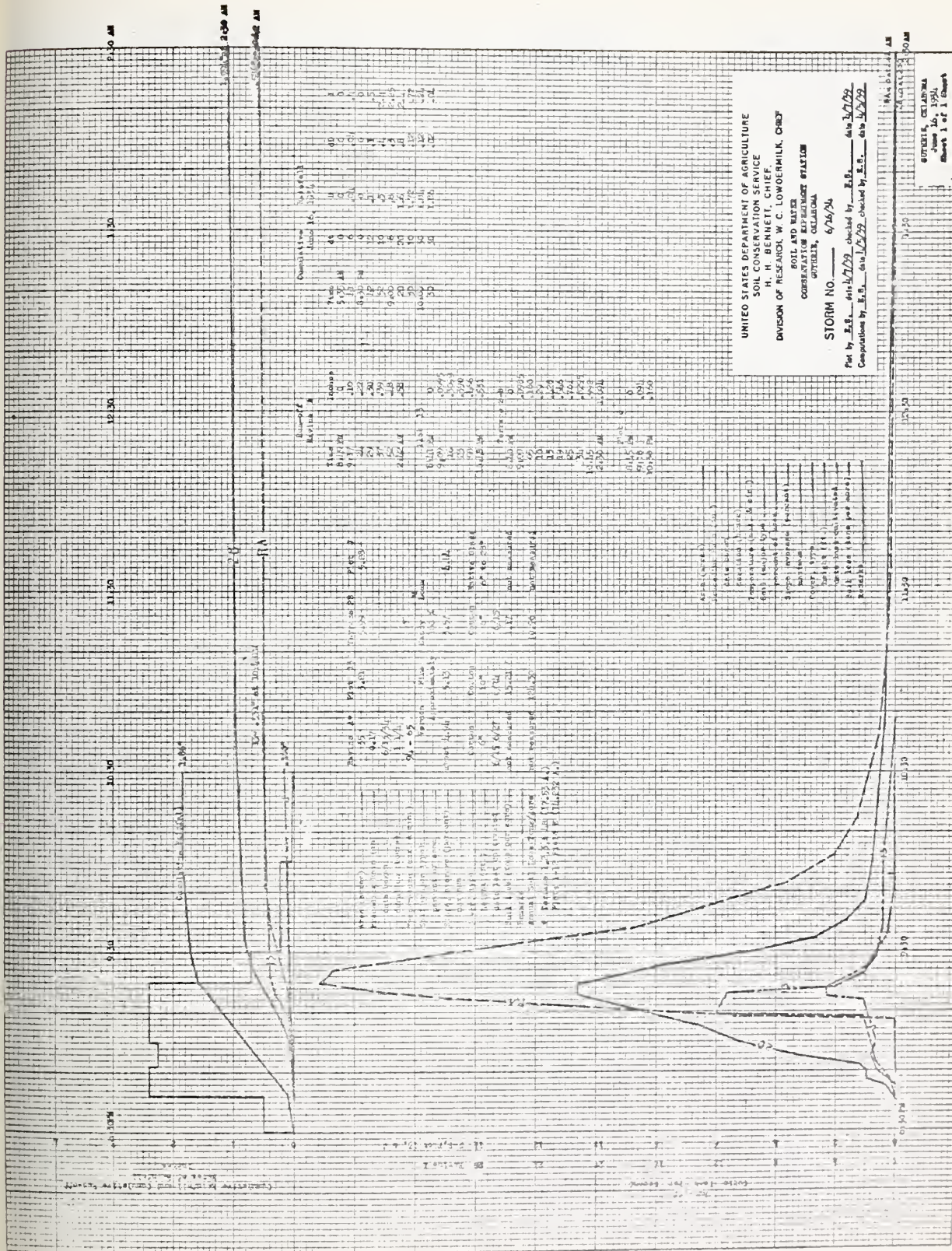


Summary of Peak Data

Time	Discharge (cfs)	Notes
12:00 PM	1,000	Base flow
1:00 PM	10,000	Peak
2:00 PM	8,000	Post-peak

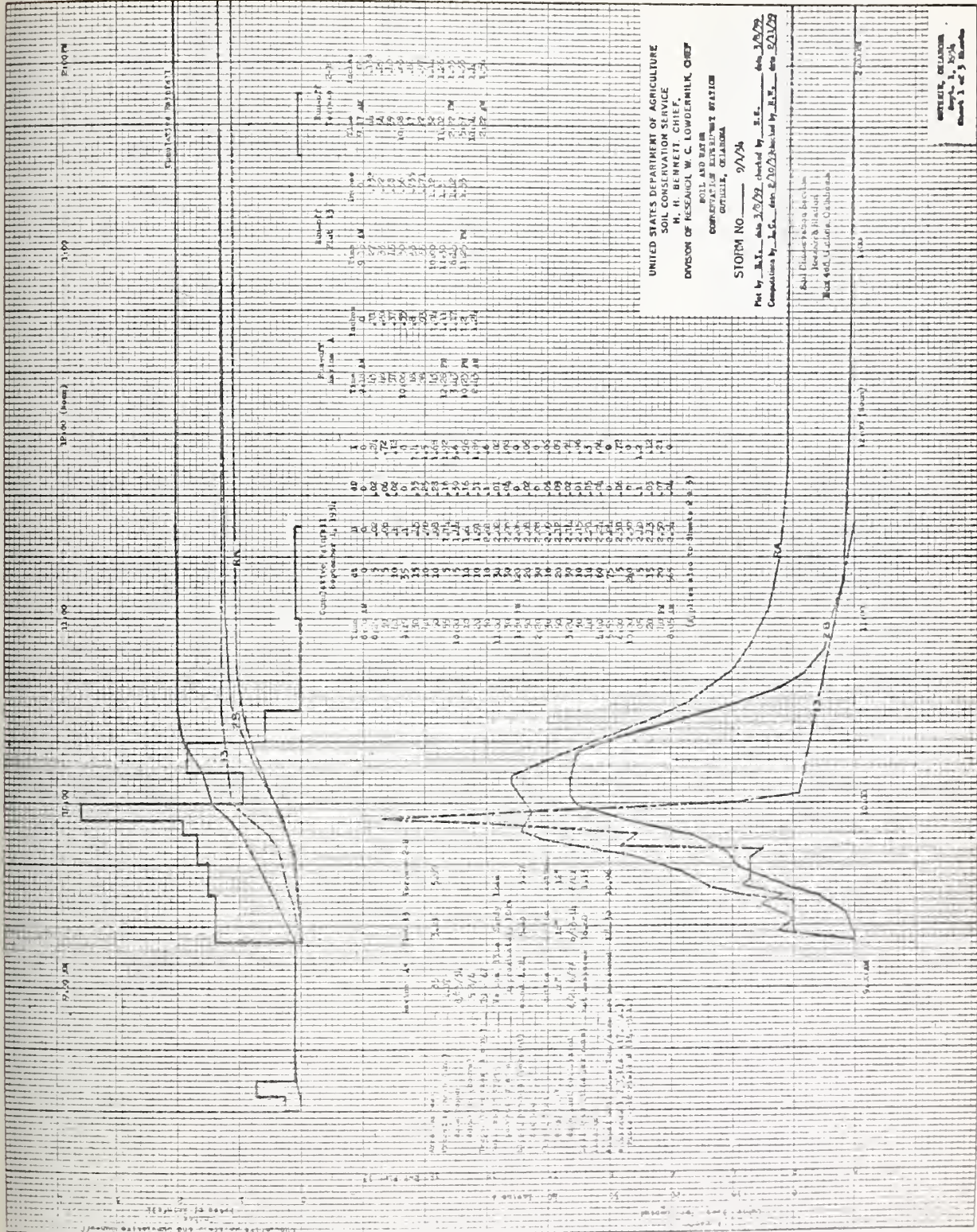
UNITED STATES DEPARTMENT OF AGRICULTURE
 SOIL CONSERVATION SERVICE
 H. H. BENNETT, CHIEF
 DIVISION OF RESEARCH, W. C. LOWMEYER, CHIEF
 COMBINATION OF RESEARCH AND EXTENSION
 STATION
 STORM NO. 5934
 Plot by J. E. ... date 2/23/29 checked by J. E. ... date 2/23/29
 Computations by J. E. ... date 2/23/29 checked by J. E. ... date 2/23/29

Head (feet) at Station
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UNITED STATES DEPARTMENT OF AGRICULTURE
 SOIL CONSERVATION SERVICE
 H. H. BENNETT, CHIEF
 DIVISION OF RESEARCH, W. C. LOWDERMILK, CHIEF
 SOIL AND WATER
 CORRELATION RESEARCH STATION
 OTTUMWA, ILLINOIS

STORM NO. 672/34
 Plot by E.S. date 6/27/34 checked by E.S. date 6/27/34
 Computation by E.S. date 6/27/34 checked by E.S. date 6/27/34

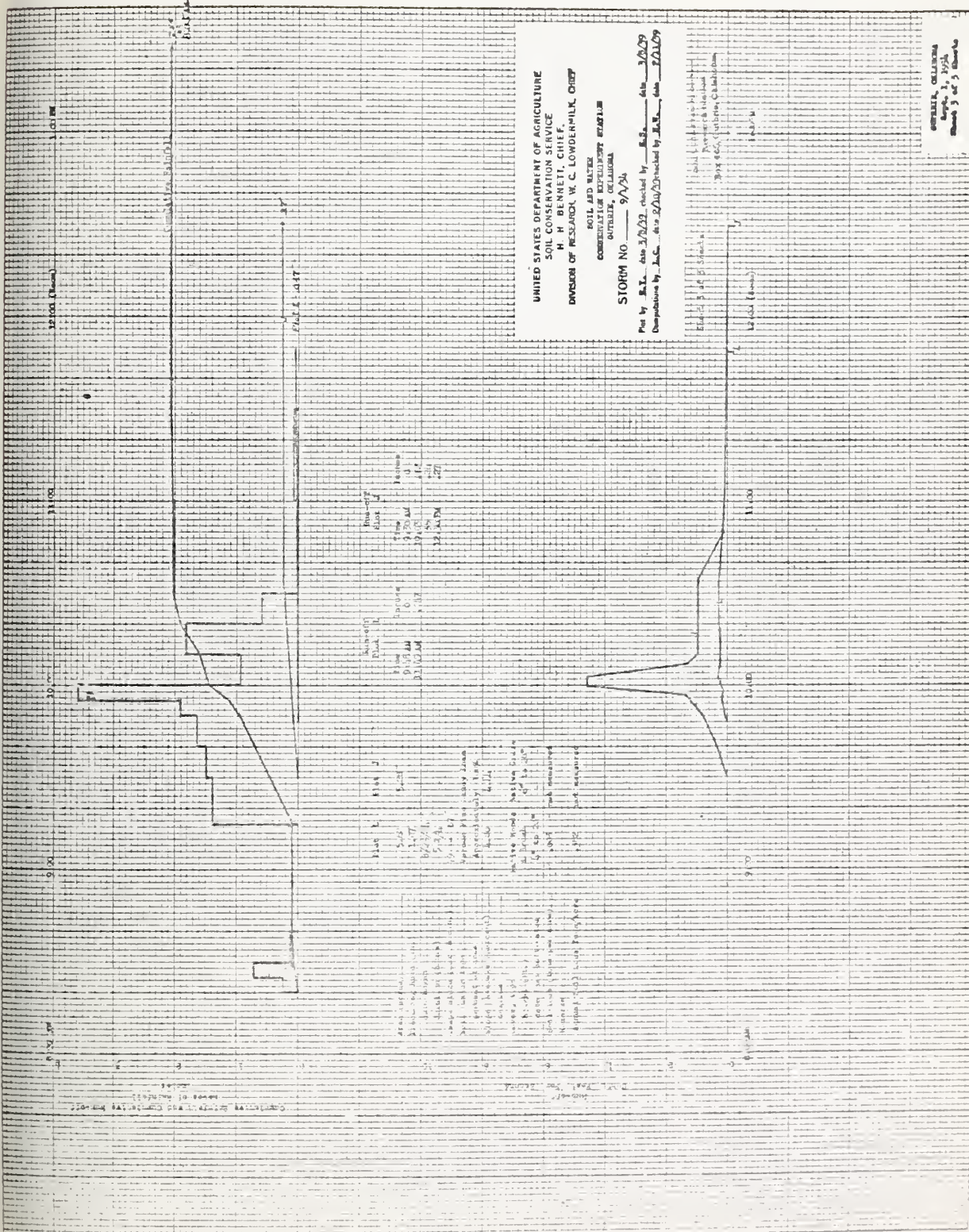


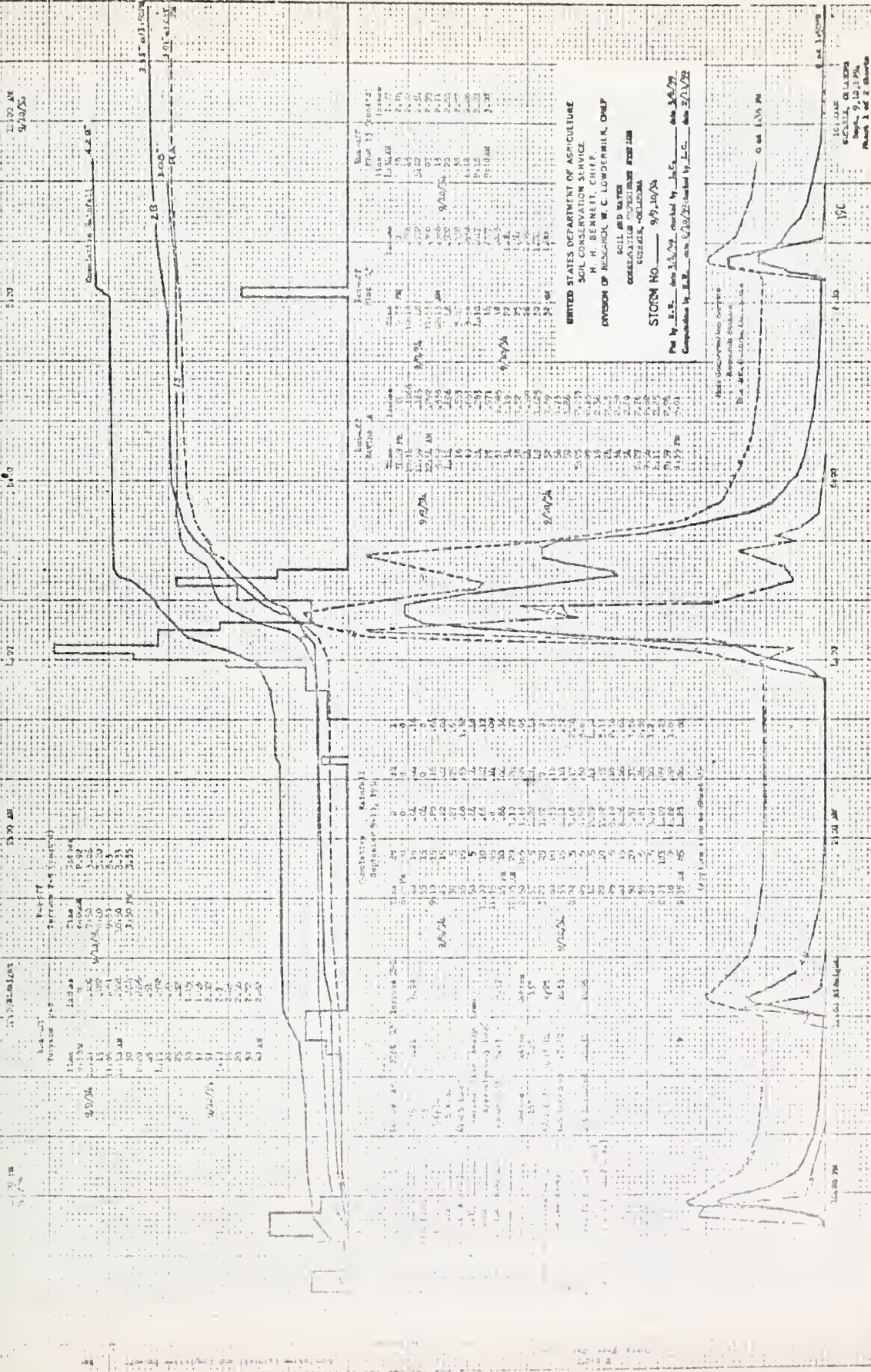
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SOIL CONSERVATION SERVICE
H. H. BENNETT, CHIEF
DIVISION OF REGIONAL W. C. LOWERY, CHIEF
WILLIAM B. BROWN, CHIEF
COMPUTATION SECTION
COLUMBIA, MISSOURI

STORM NO. 9/2/34
Part by H. H. Bennett, checked by E. E. Bennett, dated 3/8/34
Computation by J. C. Brown, dated 8/10/34, checked by H. H. Bennett, dated 8/11/34

Notations: 1. 1000 ft. = 1000 ft.
2. 1000 ft. = 1000 ft.
3. 1000 ft. = 1000 ft.

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
H. H. BENNETT, CHIEF
DIVISION OF REGIONAL W. C. LOWERY, CHIEF
WILLIAM B. BROWN, CHIEF
COMPUTATION SECTION
COLUMBIA, MISSOURI





UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
H. H. BENNETT, CHIEF
DIVISION OF RESEARCH, W. C. LOWDERMILK, CHIEF
SOIL AND WATER
CORRELATION OF FLOODING WITH
STORMS, OKLAHOMA
STORM NO. 9/9/29
Plot by H. H. Bennett, 9/10/29, checked by J. C. 9/11/29
Computation by J. C. 9/11/29, checked by J. C. 9/11/29

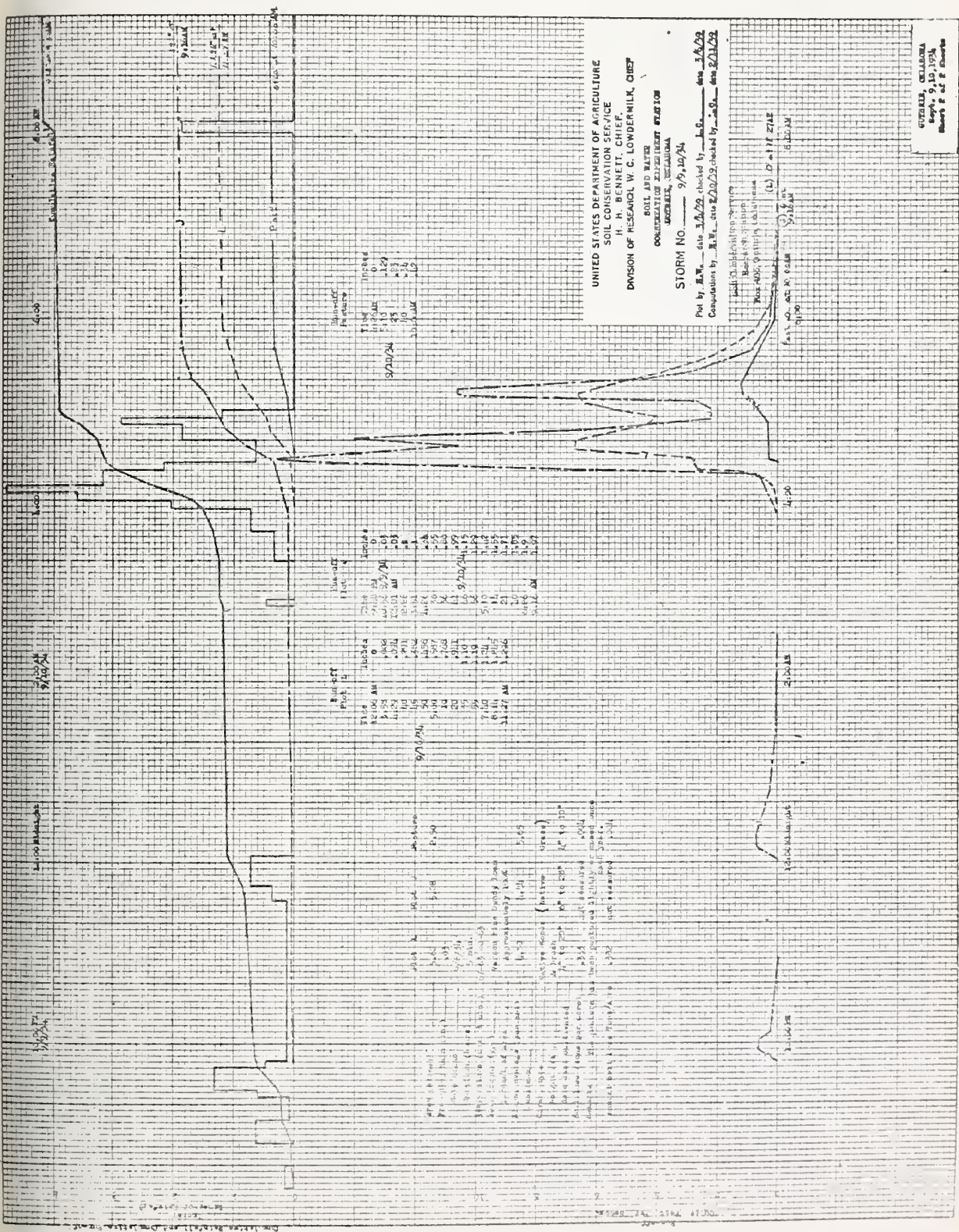
Note: Observed and Computed
Water Levels are in Feet
Base of Chart is Sea Level

Computation of Rainfall

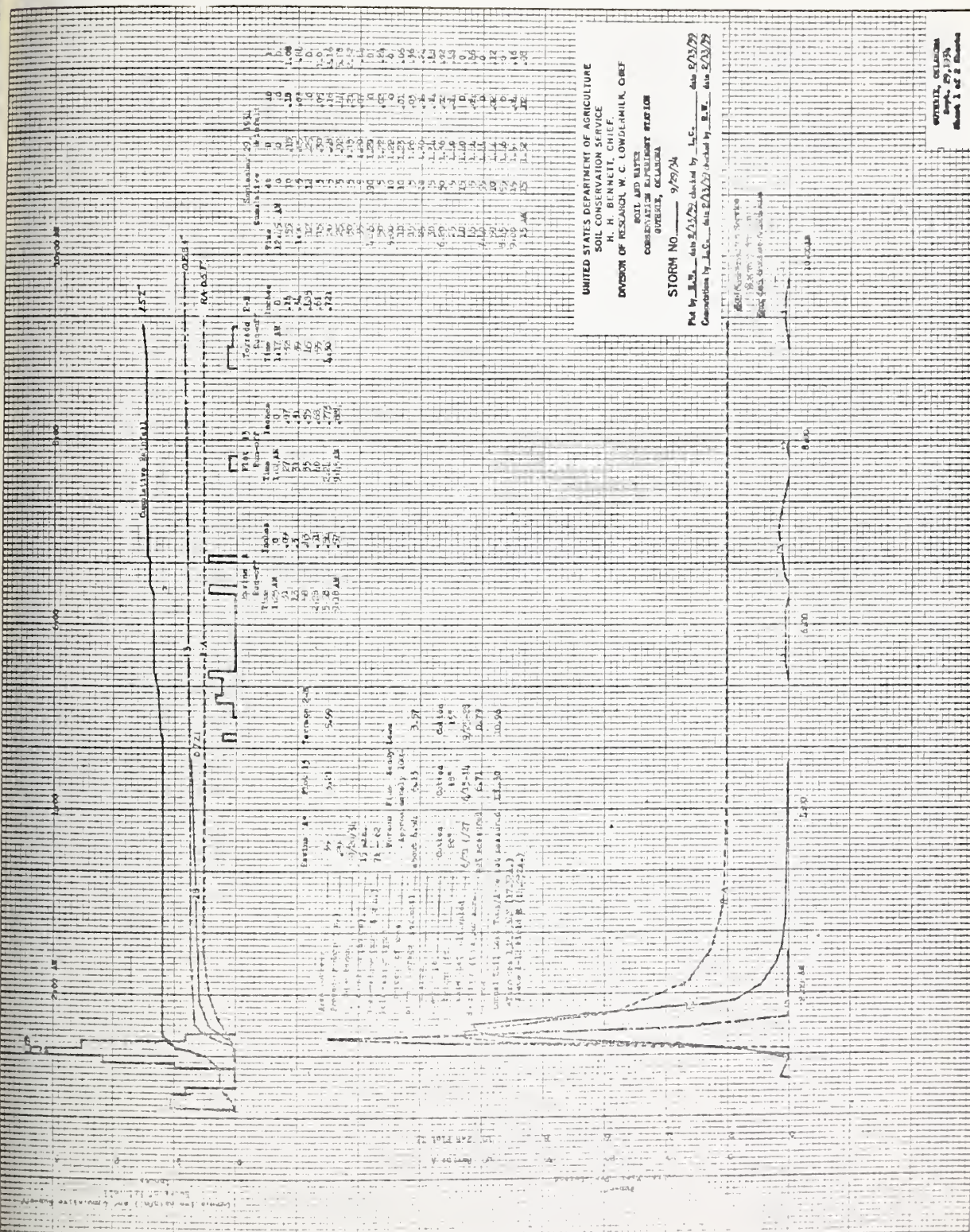
Time	Rainfall (in)	Runoff (cfs)
11:30 AM	0.00	0.00
12:00 PM	0.00	0.00
12:30 PM	0.00	0.00
1:00 PM	1.50	15.00
1:30 PM	0.00	0.00
2:00 PM	0.00	0.00
2:30 PM	0.00	0.00
3:00 PM	0.00	0.00
3:30 PM	0.00	0.00
4:00 PM	0.00	0.00
4:30 PM	0.00	0.00
5:00 PM	0.00	0.00
5:30 PM	0.00	0.00
6:00 PM	0.00	0.00
6:30 PM	0.00	0.00
7:00 PM	0.00	0.00
7:30 PM	0.00	0.00
8:00 PM	0.00	0.00
8:30 PM	0.00	0.00
9:00 PM	0.00	0.00
9:30 PM	0.00	0.00
10:00 PM	0.00	0.00

Computation of Rainfall

Time	Rainfall (in)	Runoff (cfs)
11:30 AM	0.00	0.00
12:00 PM	0.00	0.00
12:30 PM	0.00	0.00
1:00 PM	1.50	15.00
1:30 PM	0.00	0.00
2:00 PM	0.00	0.00
2:30 PM	0.00	0.00
3:00 PM	0.00	0.00
3:30 PM	0.00	0.00
4:00 PM	0.00	0.00
4:30 PM	0.00	0.00
5:00 PM	0.00	0.00
5:30 PM	0.00	0.00
6:00 PM	0.00	0.00
6:30 PM	0.00	0.00
7:00 PM	0.00	0.00
7:30 PM	0.00	0.00
8:00 PM	0.00	0.00
8:30 PM	0.00	0.00
9:00 PM	0.00	0.00
9:30 PM	0.00	0.00
10:00 PM	0.00	0.00



UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
H. H. BENNETT, CHIEF
DIVISION OF MECHANICAL W. C. LONDERMILK, CHIEF
CONSULTING ENGINEER
STORM NO. 9/10/24
For by H.W. date 3/10/22 checked by J.E. date 3/10/22
Computation by J.E. date 2/10/22 checked by J.E. date 2/10/22



UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
DIVISION OF RESEARCH

Soil Conservation Service
Research Station
Box 415, Guthrie, Oklahoma

RECORD OF SINGLE STORMS AND THEIR RUN-OFFS ON VARIOUS WATERSHEDS

MONTH January - December, 19 35
SHEET 1 OF 5 SHEETS

Date	WATER SHED		RAINFALL					TEMPERATURE (degrees F)			Run-off				Silt Loss (tons per acre)	CONDITION OF WATERSHED			
	Number	Area (acres)	Stage No.	Began (hour)	Duration (minutes)	Amount (inches)	MAXIMUM INTERMITT			Began (hour)	Ended (hour)	Amount (inches)	MAXIMUM RATE						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
1/25																			
1/7	# 1	35	Field	7:30A	205	0.50	0.72	0.32	0.28		55	51							Ravine A - Watershed No. 1
"	# 2	3.21	"	"	"	"	"	"	"	"	"	"							Plot 13
"	# 3	3.13	"	"	"	"	"	"	"	"	"	"							" 15A
"	# 4	5.62	"	"	"	"	"	"	"	"	"	"							" 1
"	# 5	5.28	"	"	"	"	"	"	"	"	"	"							" 4
"	# 6	5.79	"	"	"	"	"	"	"	"	"	"							" 5
"	# 7	5.67	"	"	"	"	"	"	"	"	"	"							" 6
"	# 8	2.85	"	"	"	"	"	"	"	"	"	"							" 3A
"	# 9	2.58	"	"	"	"	"	"	"	"	"	"							" 3C
"	# 10	1.20	"	"	"	"	"	"	"	"	"	"							" 5C
"	# 11	2.50	"	"	"	"	"	"	"	"	"	"							" CE
"																			Pasture
1/18	# 1-#11 As Above																		No. 1 Ravine A
2/7	# 1	"	"	12:00P	210	0.06	0.72	0.24	0.16		54	39	2:15A	11:10A	0.16	4.70	2:10A	0.99	Soil-Vernon fine sandy loam
2/12-13	# 2	"	"	8:30A	95	0.55	0.72	0.24	0.08		49	34	1:49A	7:12A	0.35	1.05	2:25A	0.80	Average land slope 4.91%
2/17	# 3	"	"	8:40P	140	0.31	0.24	0.08			53-55	29-34	2:00A	3:15A	0.01	0.12	2:25A	1.14	Approximately 32 acres cultivated
2-4	# 4	"	"	1:00P	120	0.96	1.14	0.68	0.36		66-69	55-51	2:01A	3:04A	0.03	0.226	2:45A	1.12	3 acres read and drainage ditch
2/10	# 5	"	"	11:00P	75	0.39	2.76	1.36	0.70		54	16	1:59A	12:53P	0.18	0.16	2:53A	0.97	See 2 and 3-B for field operations
	# 6	"	"	9:25A	75								10:16A	12:55P	0.51	2.09	2:28A	0.64	No. 2 Plot 13
3/11	# 1	"	"	1:10A	420	1.15	1.20	1.00	1.00		50	37	1:18A	6:18A	0.19	0.66	2:35A	0.96	Soil-Vernon fine sandy loam - Eroded phase
"	# 2	"	"	"	"	"	"	"	"		"	"	1:35A	8:15A	0.22	0.51	2:37A	0.93	Average land slope 5.13%
"	# 3	"	"	"	"	"	"	"	"		"	"	No Run-off	No Run-off					Unterraced
"	# 4	"	"	"	"	"	"	"	"		"	"	"	"					Flowed 2/28 and 3/2
"	# 5	"	"	"	"	"	"	"	"		"	"	"	"					Bladed to prevent blowing 3/27
"	# 6	"	"	"	"	"	"	"	"		"	"	"	"					Bladed and harrowed 5/13
"	# 7	"	"	"	"	"	"	"	"		"	"	"	"					Cowpeas planted 6/5
"	# 8	"	"	"	"	"	"	"	"		"	"	"	"					Cultivated 6/27 and 7/17
"	# 9	"	"	"	"	"	"	"	"		"	"	"	"					Vetch cover crop drilled
"	# 10	"	"	"	"	"	"	"	"		"	"	"	"					between rows 9/7
"	# 11	"	"	"	"	"	"	"	"		"	"	"	"					Cowpeas and cover crop turned under with one-way disk
3/12-23	# 1-#11			11:30P	210	0.60	6.18	2.28	1.14		83	59	5:00P	5:00A	0.72	16.39	7:30P	1.07	plow 10/9-14
3/24	# 1	"	"	4:50P	460	1.79	3.00	2.88	1.68		78	57	4:55P	1:30A	1.23	5.88	5:17P	0.56	No. 3 Plot 15A
"	# 2	"	"	"	"	"	"	"	"		"	"	5:08P	11:00P	0.14	1.19	5:18P	0.53	Soil-Vernon fine sandy loam - Eroded phase
"	# 3	"	"	"	"	"	"	"	"		"	"	5:00P	2:00A	0.16	1.15	7:13P	1.33	Average land slope 3.12%
"	# 4	"	"	"	"	"	"	"	"		"	"	5:05P	12:30A	0.95	5.88	5:21P	0.84	Terraced
"	# 5	"	"	"	"	"	"	"	"		"	"	5:04P	3:00A	0.96	3.91	5:24P	0.83	Field operations same as Plot 13
"	# 6	"	"	"	"	"	"	"	"		"	"	5:03P	9:05A	0.77	3.17	7:12P	1.02	
"	# 7	"	"	"	"	"	"	"	"		"	"	5:05P	2:07A	0.85	4.50	5:21P	0.94	
"	# 8	"	"	"	"	"	"	"	"		"	"	4:59P	12:50A	1.13	2.08	5:28P	0.66	
"	# 9	"	"	"	"	"	"	"	"		"	"	5:00P	1:13A	0.76	7.95P	1.03	0.61	
"	# 10	"	"	"	"	"	"	"	"		"	"	5:11P	6:00A	0.32	0.64	5:23P	1.47	
"	# 11	"	"	"	"	"	"	"	"		"	"	"	"					

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
DIVISION OF RESEARCH

U.S. GOVERNMENT PRINTING OFFICE

1935

PROJECT: Loc. 654, Guthrie, Oklahoma

RECORD OF SINGLE STORMS AND THEIR RUN-OFFS ON VARIOUS WATERSHEDS

MONTH January - December, 1935

SHEET 2 OF 5 SHEETS

Date	Watershed		Rainfall					Temperature (degrees F.)		Run-off				Ruppalt Minors (inches)	But Loss (tons per acre)	Condition of Watershed			
	Number	Area (acres)	Oage No.	Begin (hour)	Duration (minutes)	Amount (inches)	Maximum Intensity			Maximum	Minimum	Began (hour)	Ended (hour)				Amount (inches)	Maximum Rate	
							5 minutes (inches per hour)	15 minutes (inches per hour)	30 minutes (inches per hour)									Cu. ft. sec.	Time
1935																			
1/10	#1-#11	As Above	Field	2:50A	25	0.02				71	54						No. 4 Plot L		
1/18	"	"	"	4:05P	470	1.51			0.88	58	54						Wooded area-Virgin soil condition		
1/28	#1	"	"	10:30A	270	0.99	2.16	1.52	0.96	69	60	2:54P	6:09P	0.04	0.95	3:22P	Cover-Native Woods and Brush		
"	#2	"	"	"	"	"	"	"	"	"	"	2:55P	6:05P	0.22	0.77	3:55P	Average land slope 4.80%		
"	#3	"	"	"	"	"	"	"	"	"	"	2:16P	3:40P	0.01	0.98	3:01P	No. 5 Plot J		
"	#4	"	"	"	"	"	"	"	"	"	"	2:16P	3:48P	0.01	0.98	3:10P	Sr. 1-Vernon fine sandy loam		
"	#5	"	"	"	"	"	"	"	"	"	"	2:21P	5:29P	0.09	0.93	3:09P	Badly gullied and eroded		
"	#6	"	"	"	"	"	"	"	"	"	"	2:14P	6:26P	0.19	0.80	3:10P	Average land slope 4.44%		
"	#7	"	"	"	"	"	"	"	"	"	"	2:40P	8:00P	0.10	0.89	3:12P	Cover-Native Grass		
"	#8	"	"	"	"	"	"	"	"	"	"	2:50P	5:30P	0.03	0.96	2:56P	No. 6 Terrace 2-B		
"	#9	"	"	"	"	"	"	"	"	"	"	2:11P	7:26P	0.08	0.91	3:00P	Soil-Vernon fine sandy loam - Eroded phase		
"	#10	"	"	"	"	"	"	"	"	"	"	No Run-off					Average land slope 2.79%		
"	#11	"	"	"	"	"	"	"	"	"	"	12:39P	10:39P	0.23	1.30	4:29P	Vertical spacing 3.29 ft.		
3/1	#1	"	"	10:45P	1230	1.53	0.36	0.28	0.24	53-13	42-41	12:32P	10:02P	0.22	1.31	5:00P	Grade variable 0" to 1"		
"	#2	"	"	"	"	"	"	"	"	"	"	9:50A	10:48P	0.13	1.40	6:58P	Plowed with moldboard plow		
"	#3	"	"	"	"	"	"	"	"	"	"	9:52A	5:52A	0.38	1.15	3:00P	2/12-18		
"	#4	"	"	"	"	"	"	"	"	"	"	9:25A	6:22A	0.83	0.70	4:50P	Cultivated to prevent blowing		
"	#5	"	"	"	"	"	"	"	"	"	"	9:30A	8:30A	0.65	0.88	5:30P	3/27-29		
"	#6	"	"	"	"	"	"	"	"	"	"	1:27P	1:27A	0.42	0.57	4:27P	Disked and harrowed 5/10-11		
"	#7	"	"	"	"	"	"	"	"	"	"	1:32P	7:02A	0.57	0.96	4:48P	Harrowed and planted to Darso		
"	#8	"	"	"	"	"	"	"	"	"	"	12:48A	8:38P	0.42	1.11	4:35P	5/23		
"	#9	"	"	"	"	"	"	"	"	"	"	No Run-off					Cultivated 6/15, 6/25, 7/11, and 7/15		
"	#10	"	"	"	"	"	"	"	"	"	"						Darso cut and shocked 9/19-20		
"	#11	"	"	"	"	"	"	"	"	"	"						No. 7 Terrace 3-B		
13	#1-#11	"	"	4:55P	210	0.08				75	64						Soil-Vernon fine sandy loam - Eroded phase		
15	"	"	"	2:50A	50	0.30	3.12	1.04	0.52	59	53	8:05A	12:43A	0.42	0.83	8:07P	Average land slope 4.21%		
17	"	"	"	5:15A	390	0.17				64	51	9:00A	11:10P	0.17	0.56	8:15A	Vertical spacing 3.45 Ft.		
17-16	#1	"	"	10:40P	730	0.98	1.44	0.64	0.72	64-73	51-55	8:18A	11:51P	0.04	0.94	9:55A	Grade variable 0" to 6"		
"	#2	"	"	"	"	"	"	"	"	"	"	8:05A	4:07A	0.29	0.69	9:47P	Plowed with moldboard plow		
"	#3	"	"	"	"	"	"	"	"	"	"	7:58A	5:58A	0.57	0.41	8:18A	2/18-19		
"	#4	"	"	"	"	"	"	"	"	"	"	7:59A	7:19A	0.44	0.51	8:13A	Cultivated to prevent blowing		
"	#5	"	"	"	"	"	"	"	"	"	"	8:00A	2:32P	0.18	0.50	9:12A	3/27-29		
"	#6	"	"	"	"	"	"	"	"	"	"	8:17A	4:02A	0.35	0.43	9:38A	Disked and harrowed 5/10-11		
"	#7	"	"	"	"	"	"	"	"	"	"			0.20E	0.782	8:15A	Harrowed and planted to Darso		
"	#8	"	"	"	"	"	"	"	"	"	"	8:53A	8:53P	0.18	0.80	9:53A	5/24-27		
"	#9	"	"	"	"	"	"	"	"	"	"						Cultivated 6/16, 6/26, 7/12, 7/16		
"	#10	"	"	"	"	"	"	"	"	"	"						Darso cut and shocked 9/19-24		
"	#11	"	"	"	"	"	"	"	"	"	"								
6/18	#1-#11	"	"	7:50P	20	0.19	0.96	0.64	0.10	73	55								

RECORD OF SINGLE STORMS AND THEIR RUN-OFFS ON VARIOUS WATERSHEDS

MONTH January - December, 19 35
SHEET 3 OF 5 SHEETS

Date	Weathered		Rainfall				Temperature (degrees F.)		Run-off				Rainfall minus Run-off (inches)	Soil Loss (tons per acre)	Comments or Remarks	
	Number	Area (acres)	Base No.	Depth (inches)	Amount (inches)	Maximum Intensity			Hrs. (hour)	Feet (feet)	Amount (inches)	Maximum Rate				
						5 minutes (inches per hour)	15 minutes (inches per hour)	30 minutes (inches per hour)				Cu. ft. sec.				Time
5/19	1	1.00	1	1.00	1	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
5/20	2	2.00	2	2.00	2	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
5/21	3	3.00	3	3.00	3	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
5/22	4	4.00	4	4.00	4	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
5/23	5	5.00	5	5.00	5	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
5/24	6	6.00	6	6.00	6	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
5/25	7	7.00	7	7.00	7	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00
5/26	8	8.00	8	8.00	8	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
5/27	9	9.00	9	9.00	9	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00
5/28	10	10.00	10	10.00	10	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00
5/29	11	11.00	11	11.00	11	11.00	11.00	11.00	11.00	11.00	11.00	11.00	11.00	11.00	11.00	11.00
5/30	12	12.00	12	12.00	12	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
5/31	13	13.00	13	13.00	13	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00
6/1	14	14.00	14	14.00	14	14.00	14.00	14.00	14.00	14.00	14.00	14.00	14.00	14.00	14.00	14.00
6/2	15	15.00	15	15.00	15	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
6/3	16	16.00	16	16.00	16	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00
6/4	17	17.00	17	17.00	17	17.00	17.00	17.00	17.00	17.00	17.00	17.00	17.00	17.00	17.00	17.00
6/5	18	18.00	18	18.00	18	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00
6/6	19	19.00	19	19.00	19	19.00	19.00	19.00	19.00	19.00	19.00	19.00	19.00	19.00	19.00	19.00
6/7	20	20.00	20	20.00	20	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00
6/8	21	21.00	21	21.00	21	21.00	21.00	21.00	21.00	21.00	21.00	21.00	21.00	21.00	21.00	21.00
6/9	22	22.00	22	22.00	22	22										

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
DIVISION OF RESEARCH

Soil Conservation Service
Research Station
Box 465, Guthrie, Oklahoma

RECORD OF SINGLE STORMS AND THEIR RUN-OFFS ON VARIOUS WATERSHEDS

MONTH January - December - 1935
SHEET 4 OF 5 SHEETS

RECORD OF SINGLE STORMS AND THEIR RESULTS ON VARIOUS WATERSHEDS										SHEET 1 OF 5									
WATERSHED		RAINFALL				TEMPERATURE (degrees F.)		RUN-OFF			RAINFALL MEANS (inches)		SILT LOSS (tons per acre)		CONDITION OF WATERSHED				
Number	Area (acres)	Gage No.	Begin (hour)	Duration (minutes)	Amount (inches)	MAXIMUM INTENSITY			Total	Cu. ft. sec.	Time	(17)	(18)	(19)					
						5 minutes (inches per hour)	15 minutes (inches per hour)	30 minutes (inches per hour)											
1934																			
6/20-21	# 9 As Above	Field	11:53P	152	1.59	1.08	3.28	2.00		90-90	61-63	12:06A	9:02A	1.31	3.18	12:29A	0.28	1.30	
	# 10	"	"	"	"	"	"	"	"	"	"	12:06A	5:08A	1.27	1.78	12:18A	0.32	0.97	
	# 11	"	"	"	"	"	"	"	"	"	"	12:13A	6:00A	0.53	1.10	12:27A	1.06	0.098	
6/26	# 1-11	"	9:30A	30	0.05	0.60	0.32	0.32		81	65								
6/29-30	# 1-11	"	11:00P	205	0.22	1.68	0.96	0.18		89-81	68-68								
7/12	# 1-11	"	5:30P	15	0.25	1.68	0.96	0.18		100	71								
7/25	# 1-11	"	2:20P	100	0.50	1.92	0.80	0.18		95	73								
8/12	# 1-11	"	9:20P	10	0.06					100	78								
3/21	# 1-11	"	11:30A	135	0.10					88	74								
8/23-29	# 1	"	6:15P	725	2.72	5.28	1.18	2.82		92-63	51-62	2:57A	2:02P	0.33	11.14	3:25A	2.39	7.63	
	# 2	"	"	"	"	"	"	"	"	"	"	3:00A	1:52A	0.12	2.12	3:01A	2.30	0.07	
	# 3	"	"	"	"	"	"	"	"	"	"	3:02A	1:10A	0.27	0.95	3:15A	2.45		
	# 4	"	"	"	"	"	"	"	"	"	"	3:01A	3:36A	0.01	0.30	3:11A	2.71		
	# 5	"	"	"	"	"	"	"	"	"	"	3:01A	8:15A	0.39	1.30	3:10A	2.33		
	# 6	"	"	"	"	"	"	"	"	"	"	3:01A	9:27A	0.32	3.14	3:25A	2.10	0.31	
	# 7	"	"	"	"	"	"	"	"	"	"	3:01A	10:17A	0.11	4.40	3:19A	2.31	0.51	
	# 8	"	"	"	"	"	"	"	"	"	"	3:03A	8:13A	0.71	5.89	3:15A	2.01	1.05	
	# 9	"	"	"	"	"	"	"	"	"	"	3:05A	8:15A	0.76	2.38	3:28A	1.96	0.34	
	# 10	"	"	"	"	"	"	"	"	"	"	3:01A	8:20A	0.30	0.21	3:20A	2.12	0.59	
	# 11	"	"	"	"	"	"	"	"	"	"	3:03A	1:26A	0.10	0.61	3:18A	2.62		
9/1	# 1	"	6:50P	210	2.33	5.52	3.12	2.72		87	67	7:03P	1:51A	1.18	50.29	7:26P	1.15	16.63	
	# 2	"	"	"	"	"	"	"	"	"	"	6:58P	10:28P	0.75	9.51	7:50P	1.58	0.37	
	# 3	"	"	"	"	"	"	"	"	"	"	7:01P	3:11A	1.03	4.06	7:51P	1.30		
	# 4	"	"	"	"	"	"	"	"	"	"	7:07P	8:17P	0.04	0.16	7:52P	2.29		
	# 5	"	"	"	"	"	"	"	"	"	"	7:02P	3:03A	0.69	6.22	7:29P	1.64		
	# 6	"	"	"	"	"	"	"	"	"	"	7:01P	1:58A	1.36	11.31	7:36P	0.97	1.00	
	# 7	"	"	"	"	"	"	"	"	"	"	7:01P	1:59A	1.33	9.67	7:55P	1.00	1.15	
	# 8	"	"	"	"	"	"	"	"	"	"	7:01P	12:15A	1.51	7.15	7:18P	0.82	2.29	
	# 9	"	"	"	"	"	"	"	"	"	"	6:59P	12:10A	1.55	1.12	7:10P	0.78	0.19	
	# 10	"	"	"	"	"	"	"	"	"	"	7:05P	1:10A	1.12	1.14	7:35P	1.21	0.28	
	# 11	"	"	"	"	"	"	"	"	"	"	7:12P	9:50P	0.10	0.37	7:32P	2.23		
9/8-	# 1-11	"	5:05P	730	0.58	0.96	0.14	0.30		83-70	65-59								
9/15	# 1-11	"	2:00P	10	0.05	0.18	0.21	0.16		88	66								
9/21	# 1-11	"	7:30P	630	0.29	0.18	0.21	0.16		86-77	63-65								
9/26	# 1-11	"	6:35A	55	0.13	1.56	0.83	0.60		62	59								
10/3	# 1-11	"	3:35A	240	0.14					73	51								
10/9	# 1-11	"	1:10A	25	0.04					76	53								
10/10	# 1-11	"	12:55A	20	0.03					63	47								
10/18	# 1-11	"	2:50A	110	0.66	1.92	1.04	0.96		65	57								
10/20	# 1-11	"	2:05P	190	0.33	0.96	0.56	0.34		78	57								

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
DIVISION OF RESEARCH

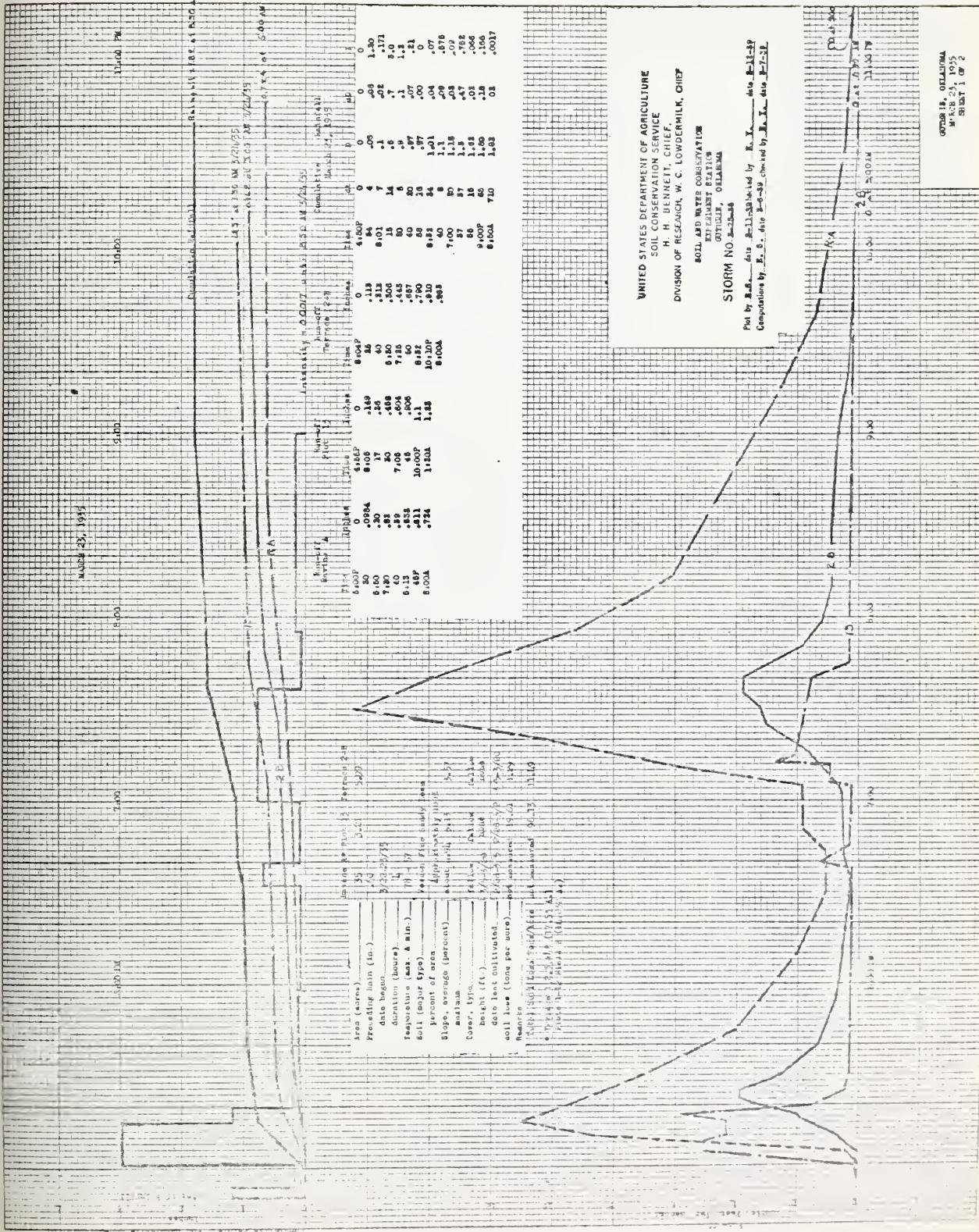
Soil Conservation Service
Research Station
Box 466, Guthrie, Oklahoma

RECORD OF SINGLE STORMS AND THEIR RUN-OFFS ON VARIOUS WATERSHEDS

Month January - December, 1935
Sheet 5 OF 5 SHEETS

Date	WATERSHED			RAINFALL				TEMPERATURE (degrees F.)				Run-off		Basin Area (sq. mi.)	Run-off (inches)	Run-off (cfs per sec.)	Orientation of Watershed
	Number	Area (sq. mi.)	Stage No.	Began (hour)	Duration (minutes)	Amount (inches)	* Amount (inches)	5 minutes (inches per hour)	15 minutes (inches per hour)	30 minutes (inches per hour)	Maximum Intensity	Amount (inches)	Ended (hour)	Hours (hour)	Feet (feet)	Time	
10/24/35	(1)																(18)
10/24/35	#1	As Above	Field #	4:00P	990	0.75	0.60	0.28	0.24	0.24	0.24	52-52	38-43				(19)
10/26	"	"	"	"	"	0.03	"	"	"	"	"	55	45				
10/31	"	"	"	7:50A	260	0.37	1.08	0.76	0.42			72	68				
11/3-11	"	"	"	"	"	0.13	"	"	"	"	"	76-37	45-34				
11/9	"	"	"	"	"	0.15	"	"	"	"	"	74	40				
11/11	"	"	"	12:10P	80	0.05	"	"	"	"	"	57-37	36-35				
11/11	"	"	"	11:10P	140	0.09	0.24	0.08	0.08	0.08	0.08	33	30				
11/24	"	"	"	6:00A	840	0.33	"	"	"	"	"	41	38				
11/24	#1	"	"	2:30P	1385	1.15	0.48	0.40	0.32	0.32	0.32	47-58	36-39	8:52A	6:45P	0.138	1.01
11/26	#2	"	"	"	"	"	"	"	"	"	"	"	"	No Run-off			
"	#3	"	"	"	"	"	"	"	"	"	"	"	"	No Run-off			
"	#4	"	"	"	"	"	"	"	"	"	"	"	"	No Run-off			
"	#5	"	"	"	"	"	"	"	"	"	"	"	"	No Run-off			
"	#6	"	"	"	"	"	"	"	"	"	"	"	"	8:13A	1:00A	0.591	
"	#7	"	"	"	"	"	"	"	"	"	"	"	"	8:04A	2:19A	0.47	
"	#8	"	"	"	"	"	"	"	"	"	"	"	"	2:13A	12:00M	0.68	
"	#9	"	"	"	"	"	"	"	"	"	"	"	"	9:02A	6:15P	0.15	
"	#10	"	"	"	"	"	"	"	"	"	"	"	"	No Run-off			
"	#11	"	"	"	"	"	"	"	"	"	"	"	"	No Run-off			
11/26	#1-#11	"	"	9:00P	30	0.03	"	"	"	"	"	58	39				
12/5	#1	"	"	6:05A	630	0.95	0.72	0.40	0.24	0.24	0.24	48	34	9:15A	8:30P	0.114	0.84
"	#2	"	"	"	"	"	"	"	"	"	"	"	"	No Run-off			
"	#3	"	"	"	"	"	"	"	"	"	"	"	"	No Run-off			
"	#4	"	"	"	"	"	"	"	"	"	"	"	"	No Run-off			
"	#5	"	"	"	"	"	"	"	"	"	"	"	"	Trace of Run-off			
"	#6	"	"	"	"	"	"	"	"	"	"	"	"	10:41A	6:25A	0.39	
"	#7	"	"	"	"	"	"	"	"	"	"	"	"	10:51A	12:53A	0.60	
"	#8	"	"	"	"	"	"	"	"	"	"	"	"	9:46A	6:56A	0.61	
"	#9	"	"	"	"	"	"	"	"	"	"	"	"	8:38A	12:03A	0.59	
"	#10	"	"	"	"	"	"	"	"	"	"	"	"	No Run-off			
"	#11	"	"	"	"	"	"	"	"	"	"	"	"	No Run-off			
12/20	#1-#11	"	"	2:00P	270	0.18	"	"	"	"	"	29	24				
12/24	"	"	"	12:00M	350	0.18	"	"	"	"	"	39	34				

Soil Loss not measured on Plot J and Ravine A
* Total rainfall based on Standard Gage
R = Estimated



UNITED STATES DEPARTMENT OF AGRICULTURE
 SOIL CONSERVATION SERVICE
 H. H. BENNETT, CHIEF
 DIVISION OF RESEARCH, W. C. LOWDERMILK, CHIEF
 SOIL AND WATER CONSERVATION
 STATION
 STATION, OKLAHOMA
 STORM NO. 1-15-35
 Plot by R. L. Bennett, dated 3-11-35, by R. L. Bennett, dated 3-11-35
 Computation by E. D. Bennett, dated 3-11-35, by E. D. Bennett, dated 3-11-35

三

05/17/2014 04:21 PM

Scitex 10000

intensity: 0.001 units

Wavelength	Intensity	Wavelength	Intensity
7100	100	7100	100
7150	100	7150	100
7200	100	7200	100
7250	100	7250	100
7300	100	7300	100
7350	100	7350	100
7400	100	7400	100
7450	100	7450	100
7500	100	7500	100
7550	100	7550	100
7600	100	7600	100
7650	100	7650	100
7700	100	7700	100
7750	100	7750	100
7800	100	7800	100
7850	100	7850	100
7900	100	7900	100
7950	100	7950	100
8000	100	8000	100
8050	100	8050	100
8100	100	8100	100
8150	100	8150	100
8200	100	8200	100
8250	100	8250	100
8300	100	8300	100
8350	100	8350	100
8400	100	8400	100
8450	100	8450	100
8500	100	8500	100
8550	100	8550	100
8600	100	8600	100
8650	100	8650	100
8700	100	8700	100
8750	100	8750	100
8800	100	8800	100
8850	100	8850	100
8900	100	8900	100
8950	100	8950	100
9000	100	9000	100
9050	100	9050	100
9100	100	9100	100
9150	100	9150	100
9200	100	9200	100
9250	100	9250	100
9300	100	9300	100
9350	100	9350	100
9400	100	9400	100
9450	100	9450	100
9500	100	9500	100
9550	100	9550	100
9600	100	9600	100
9650	100	9650	100
9700	100	9700	100
9750	100	9750	100
9800	100	9800	100
9850	100	9850	100
9900	100	9900	100
9950	100	9950	100
10000	100	10000	100

[illegible]

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
H. H. BENNETT, CHIEF,
DIVISION OF RESEARCH, W. C. LOWDERMILK, CHIEF
SOIL AND WATER CONSERVATION
EXPERIMENT STATION
COLUMBIA, OKLAHOMA

STOKIM NO 3-23-35

File by H. S. date 3-11-39 checked by H. Y. date 3-12-39

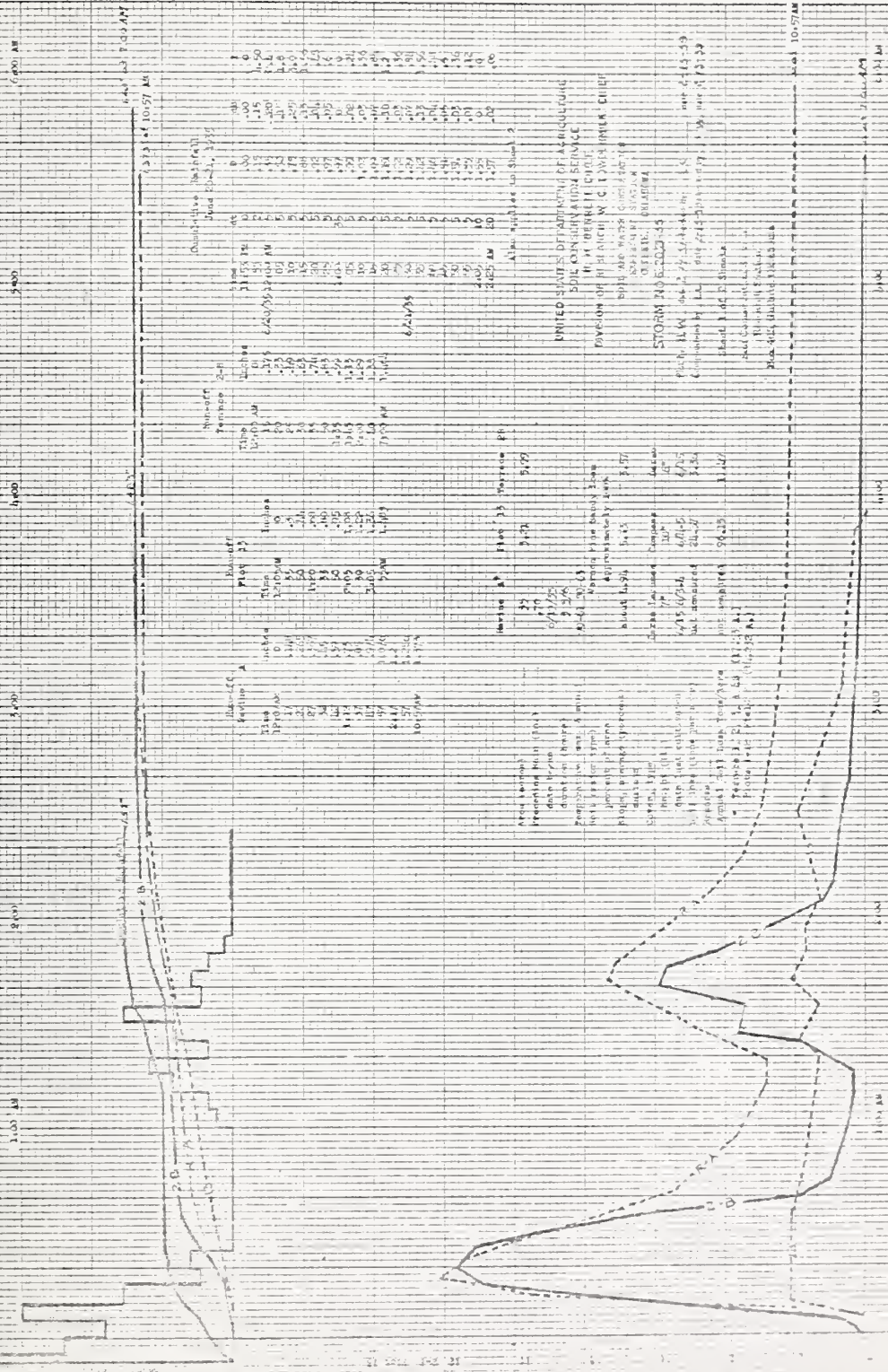
Comments by H. S. date 3-6-39 checked by H. Y. date 3-7-39

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Post-6-15-09 6:44 PM

OUTSIDE, OKLAHOMA
MARCH 25, 1935
SHEET 2 OF 2

1955



Observations (continued)

Date 20-21, 1955

Time	Location	Remarks
11:00 AM	11:00 AM	11:00 AM
11:15 AM	11:15 AM	11:15 AM
11:30 AM	11:30 AM	11:30 AM
11:45 AM	11:45 AM	11:45 AM
12:00 PM	12:00 PM	12:00 PM
12:15 PM	12:15 PM	12:15 PM
12:30 PM	12:30 PM	12:30 PM
12:45 PM	12:45 PM	12:45 PM
1:00 PM	1:00 PM	1:00 PM
1:15 PM	1:15 PM	1:15 PM
1:30 PM	1:30 PM	1:30 PM
1:45 PM	1:45 PM	1:45 PM
2:00 PM	2:00 PM	2:00 PM
2:15 PM	2:15 PM	2:15 PM
2:30 PM	2:30 PM	2:30 PM
2:45 PM	2:45 PM	2:45 PM
3:00 PM	3:00 PM	3:00 PM
3:15 PM	3:15 PM	3:15 PM
3:30 PM	3:30 PM	3:30 PM
3:45 PM	3:45 PM	3:45 PM
4:00 PM	4:00 PM	4:00 PM
4:15 PM	4:15 PM	4:15 PM
4:30 PM	4:30 PM	4:30 PM
4:45 PM	4:45 PM	4:45 PM
5:00 PM	5:00 PM	5:00 PM
5:15 PM	5:15 PM	5:15 PM
5:30 PM	5:30 PM	5:30 PM
5:45 PM	5:45 PM	5:45 PM
6:00 PM	6:00 PM	6:00 PM
6:15 PM	6:15 PM	6:15 PM
6:30 PM	6:30 PM	6:30 PM
6:45 PM	6:45 PM	6:45 PM
7:00 PM	7:00 PM	7:00 PM
7:15 PM	7:15 PM	7:15 PM
7:30 PM	7:30 PM	7:30 PM
7:45 PM	7:45 PM	7:45 PM
8:00 PM	8:00 PM	8:00 PM
8:15 PM	8:15 PM	8:15 PM
8:30 PM	8:30 PM	8:30 PM
8:45 PM	8:45 PM	8:45 PM
9:00 PM	9:00 PM	9:00 PM
9:15 PM	9:15 PM	9:15 PM
9:30 PM	9:30 PM	9:30 PM
9:45 PM	9:45 PM	9:45 PM
10:00 PM	10:00 PM	10:00 PM
10:15 PM	10:15 PM	10:15 PM
10:30 PM	10:30 PM	10:30 PM
10:45 PM	10:45 PM	10:45 PM
11:00 PM	11:00 PM	11:00 PM
11:15 PM	11:15 PM	11:15 PM
11:30 PM	11:30 PM	11:30 PM
11:45 PM	11:45 PM	11:45 PM
12:00 AM	12:00 AM	12:00 AM

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
DIVISION OF PLANT INDUSTRY
OFFICE OF PLANT INDUSTRY
WASHINGTON, D. C. 20250

STORM NO. 6200-45
PLANT INDUSTRY
OFFICE OF PLANT INDUSTRY
WASHINGTON, D. C. 20250
PLANT INDUSTRY
OFFICE OF PLANT INDUSTRY
WASHINGTON, D. C. 20250

Observations (continued)

Date 20-21, 1955

Time	Location	Remarks
11:00 AM	11:00 AM	11:00 AM
11:15 AM	11:15 AM	11:15 AM
11:30 AM	11:30 AM	11:30 AM
11:45 AM	11:45 AM	11:45 AM
12:00 PM	12:00 PM	12:00 PM
12:15 PM	12:15 PM	12:15 PM
12:30 PM	12:30 PM	12:30 PM
12:45 PM	12:45 PM	12:45 PM
1:00 PM	1:00 PM	1:00 PM
1:15 PM	1:15 PM	1:15 PM
1:30 PM	1:30 PM	1:30 PM
1:45 PM	1:45 PM	1:45 PM
2:00 PM	2:00 PM	2:00 PM
2:15 PM	2:15 PM	2:15 PM
2:30 PM	2:30 PM	2:30 PM
2:45 PM	2:45 PM	2:45 PM
3:00 PM	3:00 PM	3:00 PM
3:15 PM	3:15 PM	3:15 PM
3:30 PM	3:30 PM	3:30 PM
3:45 PM	3:45 PM	3:45 PM
4:00 PM	4:00 PM	4:00 PM
4:15 PM	4:15 PM	4:15 PM
4:30 PM	4:30 PM	4:30 PM
4:45 PM	4:45 PM	4:45 PM
5:00 PM	5:00 PM	5:00 PM
5:15 PM	5:15 PM	5:15 PM
5:30 PM	5:30 PM	5:30 PM
5:45 PM	5:45 PM	5:45 PM
6:00 PM	6:00 PM	6:00 PM
6:15 PM	6:15 PM	6:15 PM
6:30 PM	6:30 PM	6:30 PM
6:45 PM	6:45 PM	6:45 PM
7:00 PM	7:00 PM	7:00 PM
7:15 PM	7:15 PM	7:15 PM
7:30 PM	7:30 PM	7:30 PM
7:45 PM	7:45 PM	7:45 PM
8:00 PM	8:00 PM	8:00 PM
8:15 PM	8:15 PM	8:15 PM
8:30 PM	8:30 PM	8:30 PM
8:45 PM	8:45 PM	8:45 PM
9:00 PM	9:00 PM	9:00 PM
9:15 PM	9:15 PM	9:15 PM
9:30 PM	9:30 PM	9:30 PM
9:45 PM	9:45 PM	9:45 PM
10:00 PM	10:00 PM	10:00 PM
10:15 PM	10:15 PM	10:15 PM
10:30 PM	10:30 PM	10:30 PM
10:45 PM	10:45 PM	10:45 PM
11:00 PM	11:00 PM	11:00 PM
11:15 PM	11:15 PM	11:15 PM
11:30 PM	11:30 PM	11:30 PM
11:45 PM	11:45 PM	11:45 PM
12:00 AM	12:00 AM	12:00 AM

Soil Conservation Station
Research Station
Box 466, Guthrie, Oklahoma

RECORD OF SINGLE STORMS AND THEIR RUN-OFFS ON VARIOUS WATERSHEDS

MONTH January - December, 1936

SHEET 1 OF 4 SHEETS

PROJECT

DATE	WATERSHED		RAINFALL				TEMPERATURE (degrees F.)			RUN-OFF				RAINFALL MINUS Run-off (inches)		Size Loss (tons per acre)	CONDITION OF WATERSHED	
	Sta. No.	Area (acres)	Stage No.	Duration (minutes)	Amount (inches)	MAXIMUM INTENSITY			Maximum	Minimum	Begin (hour)	Ended (hour)	Amount (inches)	TIME				
						6 minutes (inches per hour)	16 minutes (inches per hour)	30 minutes (inches per hour)						Cu. ft. sec.	Time			
1936																		
1/29	# 1	35	Field R	Snow	0.01				20	20							Ravine A - Watershed No. 1	
"	"	3.21	"	"	"				"	"							Plot 13 - " 2	
"	"	3.13	"	"	"				"	"							" 15A - " 3	
"	"	5.62	"	"	"				"	"							" J - " 4	
"	"	1.28	"	"	"				"	"							" J - " 5	
"	"	5.99	"	"	"				"	"							Terrace 2B - " 6	
"	"	5.67	"	"	"				"	"							" 3B - " 7	
"	"	2.85	"	"	"				"	"							" 3C - " 8	
"	"	2.88	"	"	"				"	"							" 5C - " 9	
"	"	1.40	"	"	"				"	"							" 6E - " 10	
"	"	2.99	"	"	"				"	"							Pasture - " 11	
2/19	# 1-11 As Above			Snow	Trace				25	18							No. 1 Ravine A	
2/25	# 1	"	"	11:35P	15	0.60	5.28	2.64	1.36	75	52	11:46P	3:54A	0.09	7.97	12:07A	0.51	Soil-Vernon fine sandy loam
"	"	"	"	"	"	"	"	"	"	"	"	11:42P	1:10A	0.24	6.22	11:48P	0.36	Average land slope 4.91%
"	"	"	"	"	"	"	"	"	"	"	"	11:43P	2:22A	0.06	0.30	12:06A	0.54	Approximately 32 acres cultivated
"	"	"	"	"	"	"	"	"	"	"	"	No Run-off					tion	
"	"	"	"	"	"	"	"	"	"	"	"	11:47P	7:17A	0.34	0.513	11:45P	0.26	3 acres road and drainage ditch
"	"	"	"	"	"	"	"	"	"	"	"	11:44P	6:11A	0.31	5.12	11:54P	0.52E	See Terrace 2 and 3-B for
"	"	"	"	"	"	"	"	"	"	"	"	11:44P	1:14B	0.19	0.93	12:03A	0.41	field operations
"	"	"	"	"	"	"	"	"	"	"	"	11:43P	6:20A	0.14	0.43	11:56P	0.46	No. 2 Plot 13
"	"	"	"	"	"	"	"	"	"	"	"	11:46P	7:39A	0.18		11:48P	0.42	Soil-Vernon fine sandy loam -
"	"	"	"	"	"	"	"	"	"	"	"	No Run-off					Eroded phase	
"	"	"	"	"	"	"	"	"	"	"	"						Average land slope 5.13%	
4/8	"	"	"	"	"	"	"	"	"	"	"						Unterraced	
4/21	"	"	"	"	"	"	"	"	"	"	"						Plowed with moldboard 3" deep	
4/27	"	"	"	"	"	"	"	"	"	"	"						3/24	
5/1	"	"	"	"	"	"	"	"	"	"	"						Harrowed 4/29	
5/8	"	"	"	"	"	"	"	"	"	"	"						Cotton planted 4/30	
"	# 1	"	"	"	"	"	"	"	"	"	"						Cultivated 5/21, 5/27, & 6/12	
"	# 2	"	"	"	"	"	"	"	"	"	"						Wheat cover crop drilled in	
"	# 3	"	"	"	"	"	"	"	"	"	"						cotton 10/13	
"	# 4	"	"	"	"	"	"	"	"	"	"							
"	# 5	"	"	"	"	"	"	"	"	"	"						No. 3 Plot 15A	
"	# 6	"	"	"	"	"	"	"	"	"	"						Soil-Vernon fine sandy loam -	
"	# 7	"	"	"	"	"	"	"	"	"	"						Eroded phase	
"	# 8	"	"	"	"	"	"	"	"	"	"						Average land slope 3.42%	
"	# 9	"	"	"	"	"	"	"	"	"	"						Terraced	
"	# 10	"	"	"	"	"	"	"	"	"	"						Field operations same as Plot 13	
"	# 11	"	"	"	"	"	"	"	"	"	"						0.692	
5/10-21	# 1-11	"	"	"	"	"	"	"	"	"	"						0.59	
				"	"	"	"	"	"	"	"						No. 4 Plot 1	
					"	"	"	"	"	"	"						Wooded area - Virgin soil condition	



UNITED STATES DEPARTMENT OF AGRICULTURE
 SOIL CONSERVATION SERVICE
 DIVISION OF RESEARCH

 Soil Conservation Service
 Research Station
 P. O. Box 105, Guthrie, Oklahoma

 MONTH January - December, 1936.
 SHEET 2 OF 4 SHEETS

RECORD OF SINGLE STORMS AND THEIR RUN-OFFS ON VARIOUS WATERSHEDS

PROJECT

WATERSHED

Date	Number	Area (acres)	Date No.	Beas (hour)	Duration (minutes)	Amount (inches)	Rainfall			Temperature (degree F.)		Run-off			Rainfall Measured (inches)	Soil Loss (tons per acre)	Description of Watershed
							5 minutes (inches per hour)	15 minutes (inches per hour)	30 minutes (inches per hour)	Maximum	Minimum	Beas (hour)	Ended (hour)	Amount (inches)	Maximum Rate Cu ft. sec. Time		
5/22	#1	As Above	Field	1:00P	610	0.94	4.32	1.94	0.94	86	68	2:41P	7:02P	0.04	1.82	3:12P	No. 4 continued Cover Native Woods and Brush (Undisturbed) Average land slope 4.80%
"	#2	"	"	"	"	"	"	"	"	"	"	Trace of Run-off	Trace of Run-off	"	"	"	"
"	#3	"	"	"	"	"	"	"	"	"	"	Trace of Run-off	Trace of Run-off	"	"	"	"
"	#4	"	"	"	"	"	"	"	"	"	"	Trace of Run-off	Trace of Run-off	"	"	"	"
"	#5	"	"	"	"	"	"	"	"	"	"	Trace of Run-off	Trace of Run-off	"	"	"	"
"	#6	"	"	"	"	"	"	"	"	"	"	2:40P	7:12P	0.16	0.77	2:58P	No. 5 Plot J Soil-Vernon fine sandy loam - Badly gullied and eroded Average land slope 4.44%
"	#7	"	"	"	"	"	"	"	"	"	"	2:43P	7:50P	0.17	1.50	2:56P	"
"	#8	"	"	"	"	"	"	"	"	"	"	2:38P	4:51P	0.08	0.37	2:43P	"
"	#9	"	"	"	"	"	"	"	"	"	"	2:37P	5:41P	0.06	0.25	2:46P	"
"	#10	"	"	"	"	"	"	"	"	"	"	Trace of Run-off	Trace of Run-off	"	"	"	"
"	#11	"	"	"	"	"	"	"	"	"	"	Trace of Run-off	Trace of Run-off	"	"	"	"
5/24	#11	"	"	1:44A	40	0.02				85	65						No. 6 Terrace 2-B Soil-Vernon fine sandy loam - Eroded phase Average land slope 2.79%
5/26	"	"	"			0.02				82	62						"
5/27-28	"	"	"	11:50A	900	0.10				78-85	64-65						"
6/4-5	#1	"	"	(7:20P	(35	1.36	4.32	2.76	2.00	87-86	54-61	2:29A	9:21A	0.41	16.38	2:52A	Vertical spacing 3.93 ft. Grade variable 0° to 1° Flowed with one-way disk and oats drilled 2/29 Oats harvested 6/8-11 Disked 2° deep 6/15 Cowpeas planted 6/17-20 (Cowpea crop was a failure) Volunteer oats came up and made fair stand. Plowed with one-way 3° deep 12/9
"	#2	"	"	2:00A	(35)	"	"	"	"	"	"	2:06A	5:59A	0.31	1.24	2:18A	"
"	#3	"	"	"	"	"	"	"	"	"	"	Trace of Run-off	Trace of Run-off	"	"	"	"
"	#4	"	"	"	"	"	"	"	"	"	"	Trace of Run-off	Trace of Run-off	"	"	"	"
"	#5	"	"	"	"	"	"	"	"	"	"	2:07A	4:15A	0.11	0.77	2:20A	"
"	#6	"	"	"	"	"	"	"	"	"	"	2:06A	7:11A	0.77	3.91	2:50A	"
"	#7	"	"	"	"	"	"	"	"	"	"	2:03A	8:15A	0.75	4.20	2:20A	"
"	#8	"	"	"	"	"	"	"	"	"	"	2:09A	5:21A	0.39	2.07	2:50A	"
"	#9	"	"	"	"	"	"	"	"	"	"	2:12A	7:02A	0.41	1.23	2:53A	"
"	#10	"	"	"	"	"	"	"	"	"	"	2:11A	8:10A	0.40	0.71	2:43A	"
"	#11	"	"	"	"	"	"	"	"	"	"	Trace of Run-off	Trace of Run-off	"	"	"	"
6/6	#11	"	"	4:45P	95	0.08				89	65						No. 7 Terrace 3-B Soil-Vernon fine sandy loam - Eroded phase Average land slope 4.21%
6/17	"	"	"	3:15A	15	0.06				90	71						"
7/10	"	"	"			0.22				109	77						"
8/5	"	"	"	5:20P	40	0.13				104	72						"
8/23	"	"	"	2:30P	10	0.01				109	76						"
8/29	"	"	"	5:00A	125	0.10				89	64						"
9/1	"	"	"	9:00P	35	0.14				100	78						"
9/9	"	"	"			0.03				101	71						"
9/15	"	"	"	5:10P	10	0.10				94	74						"
9/16-17	"	"	"	5:30P	1990	2.40	1.20	0.64	0.56	73-64	71-58						"
9/19	"	"	"	8:10A	335	0.31	0.24	0.16	0.12	82	63						"
9/20	"	"	"	5:10A	25	0.03				90	68						"
9/22	#11	"	"	11:10A	385	0.94	0.96	0.40	0.36	77	70			Trace of Run-off on all Plots			"

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
DIVISION OF RESEARCH

Boll Conservation Service
Research Station
Box 405, Guthrie, Oklahoma

PROJECT

RECORD OF SINGLE STORMS AND THEIR RUN-OFFS ON VARIOUS WATERSHEDS

MONTH January - December, 1936
SHEET 3 OF 4 SHEETS

WATERSHED		RAINFALL				TEMPERATURES (degrees F.)				RUN-OFF				RAINFALL MEASUREMENTS (inches)		SOIL LOSS (tons per acre)		CONTOUR OF WATERSHED		
Number	Area (acres)	Stage No.	Runoff (hour)	Duration (minutes)	Amount (inches)	MAXIMUM INTENSITY			Maximum	Minimum	Begin (hour)	Ended (hour)	Amount (inches)	MATHEMATICAL		Cu. ft. sec.	Time	(17)	(18)	(19)
						5 minutes (inches per hour)	15 minutes (inches per hour)	30 minutes (inches per hour)						(16)	(15)					
9/23	1266	(1)																		
#1	As Above	Field B	4:51P	234	1.84	5.04	3.32	1.84	89	69	5:03P	12:36A	1.21	38.93	5:21P	0.63	11.04	No. 8 Terrace 3-C		
#2	"	"	"	"	"	"	"	"	"	"	4:56P	8:51P	0.92	14.54	5:12P	0.92	0.28	Soil-Vernon fine sandy loam		
#3	"	"	"	"	"	"	"	"	"	"	5:00P	2:43A	0.83	2.28	8:03P	1.01	0.28	Average land slope 4.33%		
#4	"	"	"	"	"	"	"	"	"	"	Trace	of Run-off	0.26	2.90	5:12P	1.58	1.020	Average land slope 4.33%		
#5	"	"	"	"	"	"	"	"	"	"	4:59P	6:06A	1.69	9.54	5:16P	0.15	0.998	Vertical spacing 3.51 ft.		
#6	"	"	"	"	"	"	"	"	"	"	4:58P	5:57A	1.73	9.67	5:17P	0.11	0.998	Grade 6" per 100 ft.		
#7	"	"	"	"	"	"	"	"	"	"	4:53P	11:07P	1.34	5.88	5:19P	0.50	1.102	Cotton stalks standing with		
#8	"	"	"	"	"	"	"	"	"	"	5:02P	1:35A	1.21	1.84	5:35P	0.63	0.302	wheat cover between rows 1/1		
#9	"	"	"	"	"	"	"	"	"	"	5:01P	1:13A	1.74	1.66	8:00P	0.10	0.927	Flowed with one-way row 4/7-8		
#10	"	"	"	"	"	"	"	"	"	"	Trace	of Run-off	0.26	2.90	5:12P	1.58	1.020	Barrowed 5/5		
#11	"	"	"	"	"	"	"	"	"	"	Trace	of Run-off	0.26	2.90	5:12P	1.58	1.020	Planted to Darso 5/6		
9/25																			Cultivated 6/1, 6/13, 6/15, & 6/18	
#1	"	"	9:15P	248	0.10	0.60	0.24	0.20	76-78	54-59									Darso cut and shocked 8/13-14	
#2	"	"	6:15A	115	1.26	3.12	2.56	1.92	78-55	59-51	11:30A	1:00P	0.82	41.84	11:47A	1.64	6.38	No. 9 Terrace 5-C		
#3	"	"	"	815	1.10	"	"	"	"	"	11:20A	2:05P	1.22	9.27	11:41A	1.24	0.106	Soil-Vernon fine sandy loam		
#4	"	"	"	"	"	"	"	"	"	"	11:35A	11:37P	0.58	2.68	11:58A	1.88		Average land slope 4.72%		
#5	"	"	"	"	"	"	"	"	"	"	Trace	of Run-off	0.28	4.30	11:48A	2.18	0.119	Vertical spacing 3.43 ft.		
#6	"	"	"	"	"	"	"	"	"	"	11:27A	7:30P	1.71	10.34	11:51A	0.75	0.542	Grade 2" per 100 ft.		
#7	"	"	"	"	"	"	"	"	"	"	11:19A	3:10P	2.00	9.27	11:44A	0.46	0.652	Field operations same as		
#8	"	"	"	"	"	"	"	"	"	"	11:20A	11:36P	1.22	5.44	11:52A	1.24	0.166	Terrace 3-C.		
#9	"	"	"	"	"	"	"	"	"	"	11:31A	3:34P	1.20	2.03	12:11A	1.26	0.363	No. 10 Terrace 5-E		
#10	"	"	"	"	"	"	"	"	"	"	11:33A	9:22P	1.26	1.88	11:55A	1.20		Soil-Vernon fine sandy loam -		
#11	"	"	"	"	"	"	"	"	"	"	Trace	of Run-off	0.26	4.30	11:48A	2.18		Graded phase		
10/6			3:30A	10	0.03				72	64								Average land slope 4.95%		
#1	"	"	"	"	"	"	"	"	"	"	7:07P	9:10P	0.02	0.616	7:30A	0.99		Vertical spacing 4.00 ft.		
#2	"	"	"	"	"	"	"	"	"	"	3:29P	11:30P	0.14	1.64	3:32P	0.77	Trace	Grade level		
#3	"	"	"	"	"	"	"	"	"	"	Trace	of Run-off	0.14					Field operations same as for		
#4	"	"	"	"	"	"	"	"	"	"	Trace	of Run-off	0.14					Plot 13		
#5	"	"	"	"	"	"	"	"	"	"	Trace	of Run-off	0.16					No. 11 Pasture Plot		
#6	"	"	"	"	"	"	"	"	"	"	12:29A	7:00A	0.34	0.29	7:10P	0.75	0.91	Soil-Vernon fine sandy loam		
#7	"	"	"	"	"	"	"	"	"	"	12:34A	2:00A	0.34	0.66	7:00P	0.57	0.71	Virgin soil condition		
#8	"	"	"	"	"	"	"	"	"	"	1:45P	1:41A	0.22	0.15	7:10P	0.69	0.052	Average land slope 5.65%		
#9	"	"	"	"	"	"	"	"	"	"	Trace	of Run-off	0.22					Cover Native Grass		
#10	"	"	"	"	"	"	"	"	"	"	Trace	of Run-off	0.22							
#11	"	"	"	"	"	"	"	"	"	"	Trace	of Run-off	0.22							

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
DIVISION OF RESEARCH

Soil Conservation Service
Research Station
Box 405, Guthrie, Oklahoma

PROJECT

RECORD OF SINGLE STORMS AND THEIR RUN-OFFS ON VARIOUS WATERSHEDS

MONTH January - December, 1936
SHEET 4 OF 4 SHEETS

WATERSHED		RAINFALL					TEMPERATURE			HOUR-OFF			RAINFALL MEASURE	SOIL LOSS	CUSHION OF WATER				
TABLE	Number	Area (acres)	Usage No.	Began (hour)	Duration (minutes)	Amount (inches)	MAXIMUM DURATION			Began (hour)	Amount (inches)	MAXIMUM RATE		(lbs. per acre)					
							1 minute (inches per hour)	15 minutes (inches per hour)	30 minutes (inches per hour)			Co. ft. sec.	Time						
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)				
10/11-9	# 1	An Above	Field	8:25P	5:5	0.56	0.60	0.10	0.38	77-82	52-55	3:38A	5:13A	0.025	1.12	3:53A	0.51	0.982	10
"	# 2	"	"	"	"	"	"	"	"	"	"	2:53A	6:16A	0.15	0.93	3:20A	0.11	"	"
"	# 3	"	"	"	"	"	"	"	"	"	"	Trace of Run-off	Trace of Run-off	"	"	"	"	"	"
"	# 4	"	"	"	"	"	"	"	"	"	"	Trace of Run-off	Trace of Run-off	"	"	"	"	"	"
"	# 5	"	"	"	"	"	"	"	"	"	"	Trace of Run-off	Trace of Run-off	"	"	"	"	"	"
"	# 6	"	"	"	"	"	"	"	"	"	"	Trace of Run-off	Trace of Run-off	"	"	"	"	"	"
"	# 7	"	"	"	"	"	"	"	"	"	"	Trace of Run-off	Trace of Run-off	"	"	"	"	"	"
"	# 8	"	"	"	"	"	"	"	"	"	"	Trace of Run-off	Trace of Run-off	"	"	"	"	"	"
"	# 9	"	"	"	"	"	"	"	"	"	"	Trace of Run-off	Trace of Run-off	"	"	"	"	"	"
"	# 10	"	"	"	"	"	"	"	"	"	"	Trace of Run-off	Trace of Run-off	"	"	"	"	"	"
"	# 11	"	"	"	"	"	"	"	"	"	"	Trace of Run-off	Trace of Run-off	"	"	"	"	"	"
10/21	# 12-13	"	"	11:50A	2:55	0.03	0.10	0.20	0.18	14	13	"	"	"	"	"	"	"	"
10/25	"	"	"	1:30P	5:0	0.15	"	"	"	61	19	"	"	"	"	"	"	"	"
10/25	"	"	"	4:30P	1:20	0.13	"	"	"	61-39	38-33	"	"	"	"	"	"	"	"
12/5	"	"	"	3:10A	1:5	0.21	0.24	0.20	0.12	51	30	"	"	"	"	"	"	"	"
12/20-27	"	"	"	2:40P	1:00	0.22	0.72	0.32	0.20	58-58	43-47	"	"	"	"	"	"	"	"
12/30	"	"	"	2:25A	5	0.05	"	"	"	19	18	"	"	"	"	"	"	"	"

Salt, 1000 gal. measured on Plot J and Ravine A
Total rainfall based on Standard Gage
R = Estimated

Cumulative rainfall and cumulative runoff
in inches

7.00 AM 8.00 9.00 10.00 11.00 12.00 Noon

Station	Issues	Issues
Fig. 1	100	100
Fig. 2	100	100
Fig. 3	100	100
Fig. 4	100	100
Fig. 5	100	100
Fig. 6	100	100
Fig. 7	100	100
Fig. 8	100	100
Fig. 9	100	100
Fig. 10	100	100

Station	Issues	Issues
Fig. 1	100	100
Fig. 2	100	100
Fig. 3	100	100
Fig. 4	100	100
Fig. 5	100	100
Fig. 6	100	100
Fig. 7	100	100
Fig. 8	100	100
Fig. 9	100	100
Fig. 10	100	100

Fig. 1	Fig. 2	Fig. 3
100	100	100
100	100	100
100	100	100
100	100	100
100	100	100
100	100	100
100	100	100
100	100	100
100	100	100
100	100	100

Fig. 1	Fig. 2	Fig. 3
100	100	100
100	100	100
100	100	100
100	100	100
100	100	100
100	100	100
100	100	100
100	100	100
100	100	100
100	100	100

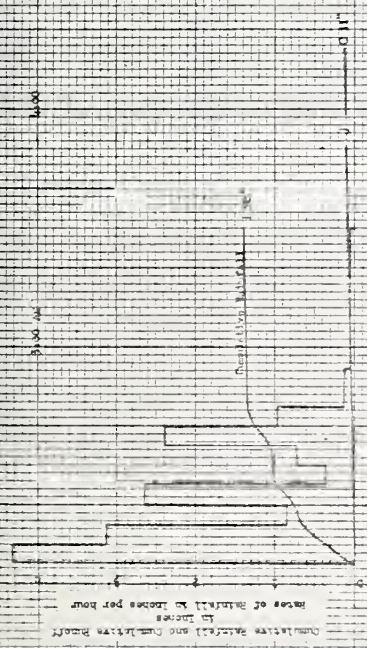
UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
H. H. BENNETT, CHIEF
DIVISION OF RESEARCH W. C. LOWDERMILK, CHIEF
SOIL AND WATER
CONSERVATION EXPERIMENT STATION
GAINESVILLE, FLORIDA

STORM NO. 5/19/36
Plot by H.W. date 2/25/39 checked by J.C. date 2/25/39
Completed by J.C. date 2/24/39 checked by J.W. date 2/25/39

Sheet 3 of 4 Sheets

7.00 AM 8.00 9.00 10.00 11.00 12.00 Noon



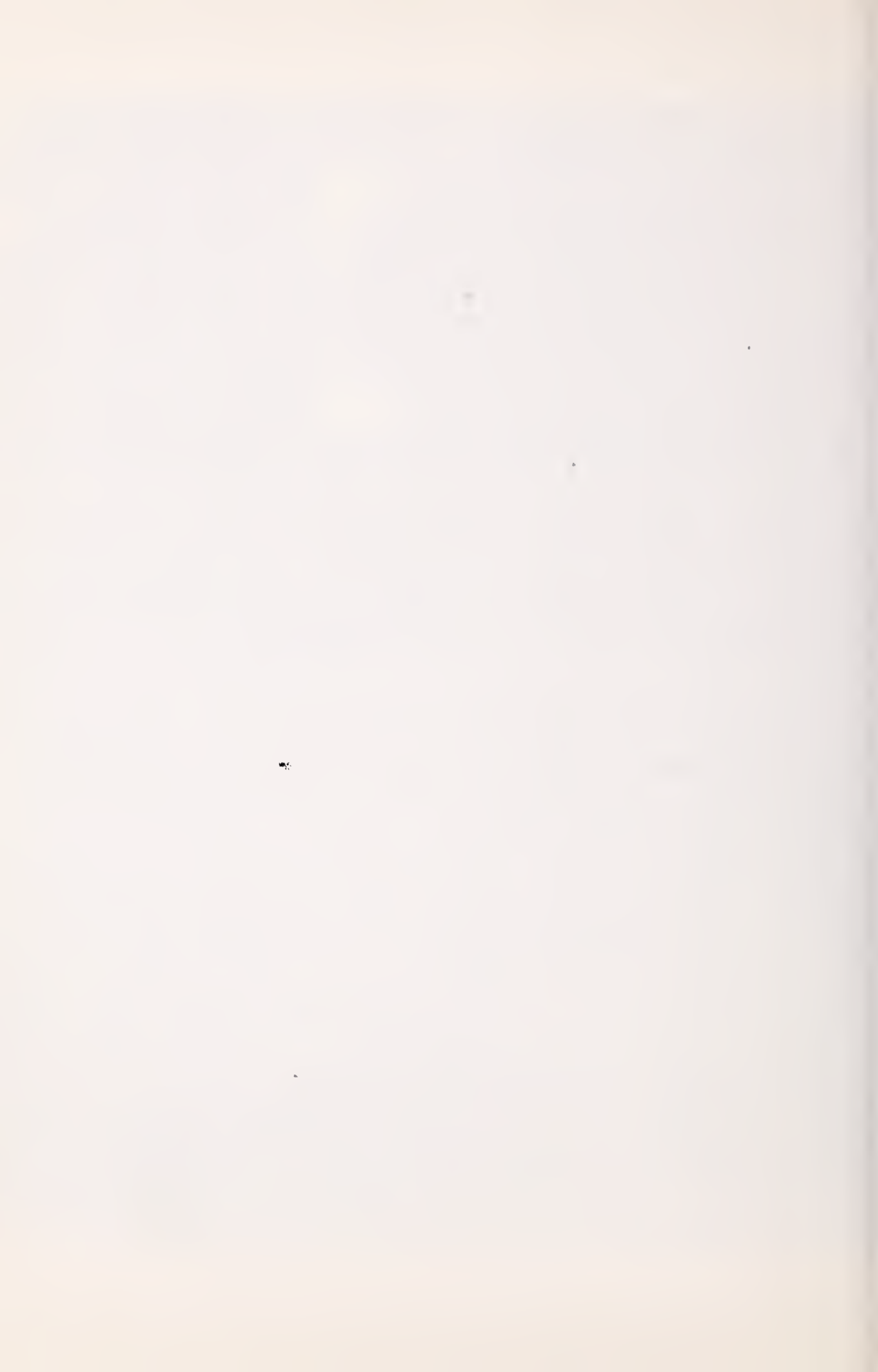


Storm		Cumulative Rainfall		Cumulative Runoff	
Time	Intensity	Time	Intensity	Time	Intensity
4:00 AM	0.1	4:00 AM	0.1	4:00 AM	0.1
4:10 AM	0.2	4:10 AM	0.2	4:10 AM	0.2
4:20 AM	0.3	4:20 AM	0.3	4:20 AM	0.3
4:30 AM	0.4	4:30 AM	0.4	4:30 AM	0.4
4:40 AM	0.5	4:40 AM	0.5	4:40 AM	0.5
4:50 AM	0.6	4:50 AM	0.6	4:50 AM	0.6
5:00 AM	0.7	5:00 AM	0.7	5:00 AM	0.7
5:10 AM	0.8	5:10 AM	0.8	5:10 AM	0.8
5:20 AM	0.9	5:20 AM	0.9	5:20 AM	0.9
5:30 AM	1.0	5:30 AM	1.0	5:30 AM	1.0
5:40 AM	0.9	5:40 AM	0.9	5:40 AM	0.9
5:50 AM	0.8	5:50 AM	0.8	5:50 AM	0.8
6:00 AM	0.7	6:00 AM	0.7	6:00 AM	0.7
6:10 AM	0.6	6:10 AM	0.6	6:10 AM	0.6
6:20 AM	0.5	6:20 AM	0.5	6:20 AM	0.5
6:30 AM	0.4	6:30 AM	0.4	6:30 AM	0.4
6:40 AM	0.3	6:40 AM	0.3	6:40 AM	0.3
6:50 AM	0.2	6:50 AM	0.2	6:50 AM	0.2
7:00 AM	0.1	7:00 AM	0.1	7:00 AM	0.1
7:10 AM	0.0	7:10 AM	0.0	7:10 AM	0.0
7:20 AM	0.0	7:20 AM	0.0	7:20 AM	0.0
7:30 AM	0.0	7:30 AM	0.0	7:30 AM	0.0
7:40 AM	0.0	7:40 AM	0.0	7:40 AM	0.0
7:50 AM	0.0	7:50 AM	0.0	7:50 AM	0.0
8:00 AM	0.0	8:00 AM	0.0	8:00 AM	0.0

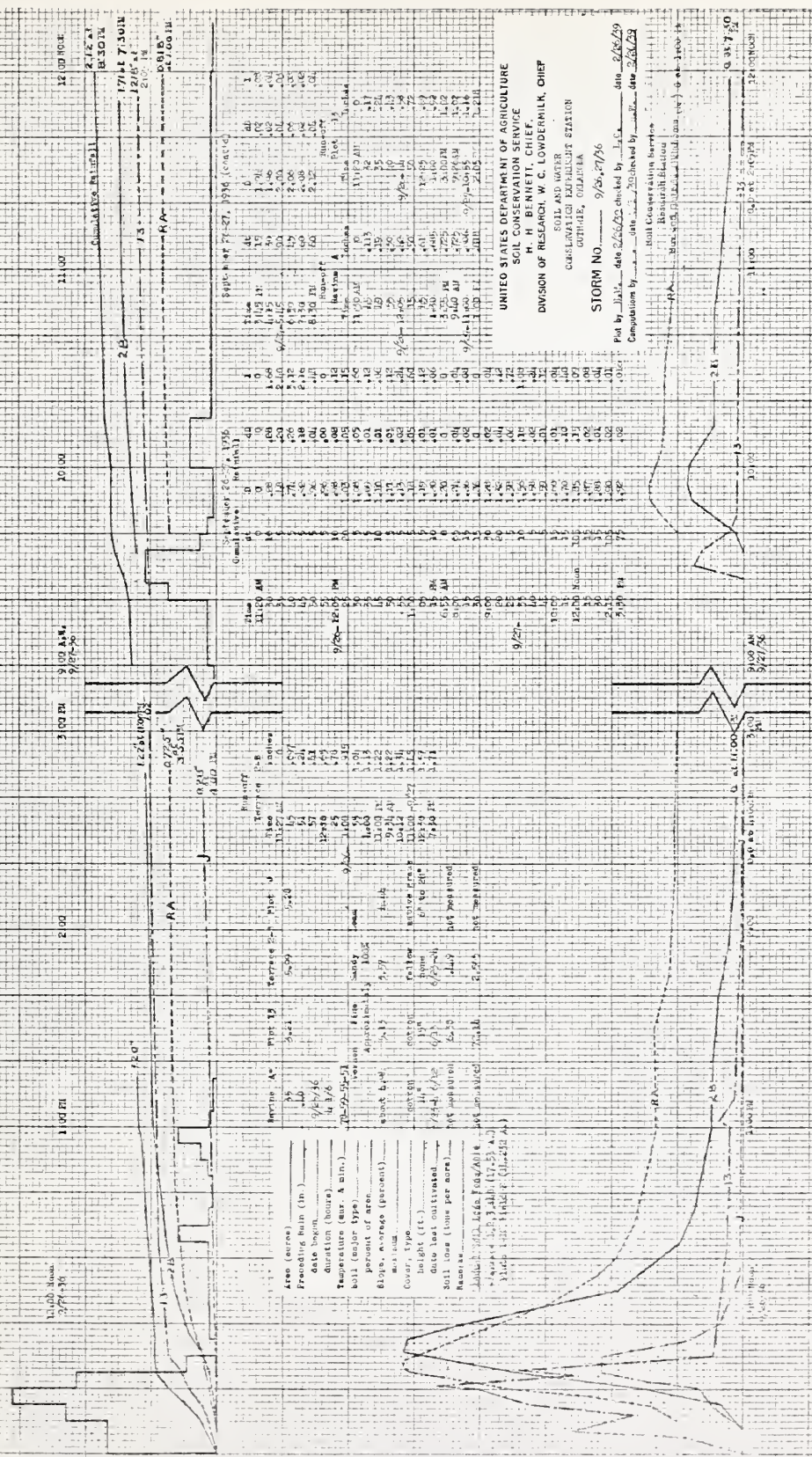
UNITED STATES DEPARTMENT OF AGRICULTURE
 SOIL CONSERVATION SERVICE
 H. H. BENNETT, CHIEF,
 DIVISION OF RESEARCH, W. C. LOWDERMILK, CHIEF,
 SOIL AND WATER
 CONSERVATION EXPERIMENT STATION
 GUTHRIE, OKLAHOMA

STORM NO. 6/5/36
 Plot by 1/1/36 date 2/2/36 checked by 1/1/36 date 2/2/36
 Computed by 1/1/36 date 2/2/36 checked by 1/1/36 date 2/2/36

Sheet 2 of 2 Sheets
 Soil Conservation Service
 Research Station
 Guthrie, Oklahoma



CONTINUOUSLY MEASURED FOR WEATHER RECORDS
 (Scale of rainfall in inches per hour)



Time	Temp (F)	Humidity (%)	Wind (mph)	Rain (in)
11:00 AM	78.0	65	1.0	0.0
11:15 AM	77.5	64	1.0	0.0
11:30 AM	72.0	63	1.0	0.8
11:45 AM	72.0	63	1.0	0.8
12:00 PM	72.0	63	1.0	0.8
12:15 PM	72.0	63	1.0	0.8
12:30 PM	72.0	63	1.0	0.8

UNITED STATES DEPARTMENT OF AGRICULTURE
 SOIL CONSERVATION SERVICE
 H. H. BENNETT, CHIEF
 DIVISION OF RESEARCH, W. C. LOWDERMILK, CHIEF
 SOIL AND WATER
 CORRELATION LABORATORY
 GUTHRIE, OKLAHOMA

STORM NO. 9/3/36
 Plot by J.H.L. date 9/3/36 checked by J.H.L. date 9/3/36
 Computed by J.H.L. date 9/3/36 checked by J.H.L. date 9/3/36

WORTHINGTON, OKLAHOMA
 Sept. 3, 1936
 Sheet 1 of 1 Sheet

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
DIVISION OF RESEARCH

Soil Conservation Service
Research Station
Project Box 465, Guthrie, Oklahoma

RECORD OF SINGLE STORMS AND THEIR RUN-OFFS ON VARIOUS WATERSHEDS

MONTH January - December, 1937

SHEET 1 OF 20 SHEETS

Date	WATERSHED			RUNOFF				TEMPERATURE (degree F)			ROD-OFF				Runoff Meters (inches)	Soil Loss (tons per acre)	Comments on Watershed		
	Number	Area (acres)	Map No.	Peak (hours)	Duration (minutes)	Amount (inches)	MAXIMUM INTENSITY			Minimum	Maximum	Began (hours)	Ended (hours)	Amount (inches)				MAXIMUM RATE	
							5 minutes (inches per hour)	15 minutes (inches per hour)	30 minutes (inches per hour)									Cu. ft. sec.	Time
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)		
1937																			
2/26-27	# 1	As Above	5		Snow	0.02				29-34	22-24						No. 10 continued Plowed with moldboard plow 3/31		
"	# 2	"	3		"	0.02				"	"						Disks 3" deep and harrowed 5/7		
"	# 3	"	4		"	0.02				"	"						Cowpeas planted 5/10		
"	# 4	"	7		"	0.05				"	"						Cultivated 6/21, 7/6		
"	# 5	"	4		"	0.02				"	"						Cowpeas plowed under 10/22		
"	# 6	"	5		"	0.02				"	"								
"	# 7	"	5		"	0.02				"	"								
"	# 8	"	9		"	0.04				"	"						No. 11 Pasture Plot		
"	# 9	"	8		"	0.04				"	"						Soil-Vernon fine sandy loam		
"	# 10	"	4		"	0.02				"	"						Virgin condition		
"	# 11	"	12		"	0.05				"	"						Average land slope 5.65%		
3/7	# 1	"	5	12:30A	150	0.04				69	35						Cover Native grass well sodded		
"	# 2	"	3	"	150	0.07				"	"								
"	# 3	"	4	12:25A	110	0.05				"	"								
"	# 4	"	7	12:30A	150	0.05				"	"								
"	# 5	"	4	12:25A	140	0.05				"	"								
"	# 6	"	5	12:30A	150	0.04				"	"								
"	# 7	"	5	"	150	0.04				"	"								
"	# 8	"	9	"	150	0.06				"	"								
"	# 9	"	8	"	120	0.06				"	"								
"	# 10	"	4	12:25A	110	0.05				"	"								
"	# 11	"	12	12:35A	100	0.07				"	"								
3/12	# 1	"	5	8:15P	735	1.37	2.88	1.28	1.06	71	41	Trace of Run-off							
"	# 2	"	3	8:00P	750	1.45	2.40	1.40	1.38	"	"	9:36P 12:00N	0.25	3.62	9:37P	1.12	7.60		
"	# 3	"	4	8:15P	720	1.47	2.64	1.44	1.40	"	"	9:33P 11:33P	0.055	0.27	10:04P	1.32	0.036		
"	# 4	"	7	8:15P	730	1.69	2.40	1.76	1.52	"	"	No Run-off							
"	# 5	"	4	8:15P	720	1.47	2.64	1.44	1.40	"	"	No Run-off							
"	# 6	"	5	8:15P	735	1.37	2.88	1.28	1.06	"	"	No Run-off							
"	# 7	"	5	8:15P	735	1.37	2.88	1.28	1.06	"	"	No Run-off							
"	# 8	"	9	8:15P	735	1.27	1.92	1.52	1.20	"	"	Trace of Run-off							
"	# 9	"	8	8:00P	775	1.34	2.40	1.84	1.30	"	"	Trace of Run-off							
"	# 10	"	4	8:15P	720	1.47	2.64	1.44	1.40	"	"	9:43P 1:37A	0.30	0.59	9:59P	1.07	0.10		
"	# 11	"	12	8:35P	725	1.52	2.40	1.28	1.20	"	"	No Run-off							
3/23	# 1	"	5	9:15A	390	0.38	0.84	0.40	0.24	63	52								
"	# 2	"	3	"	"	0.46	1.20	0.44	0.28	"	"								
"	# 3	"	4	9:10A	"	0.40	0.96	0.40	0.26	"	"								
"	# 4	"	7	9:20A	"	0.41	0.96	0.32	0.20	"	"								
"	# 5	"	4	9:10A	"	0.40	0.96	0.40	0.26	"	"								
"	# 6	"	5	9:15A	"	0.38	0.84	0.40	0.24	"	"								
"	# 7	"	5	9:15A	"	0.38	0.84	0.40	0.24	"	"								
"	# 8	"	9	9:15A	345	0.37	0.96	0.40	0.28	"	"								

RECORD OF SINGLE STORMS AND THEIR RUN-OFFS ON VARIOUS WATERSHEDS

MONTH January - December, 1937

SHEET 3 OF 20 SHEETS

[illegible]

UNITED STATES DEPARTMENT OF AGRICULTURE
 SOIL CONSERVATION SERVICE
 DIVISION OF RESEARCH

 Soil Conservation Service
 Research Station
 Project Box 465, Guthrie, Oklahoma

RECORD OF SINGLE STORMS AND THEIR RUN-OFFS ON VARIOUS WATERSHEDS

 MONTH January - December, 1937
 SHEET 2 OF 20 SHEETS

DATE	WATERSHED			RAINFALL					TEMPERATURE (degrees F.)			RUN-OFF				RUNOFF MEASUREMENT (inches)	SOIL LOSS (tons per acre)	CONDITION OF WATERSHED	
	Number	Area (acres)	Gage No.	Excess (hour)	Duration (minutes)	Amount (inches)	MAXIMUM INTENSITY			Maximum	Minimum	Beams (feet)	Eroded (feet)	Amount (cubic feet)	MAXIMUM RATE				
							1/2 minute (inches per hour)	1 minute (inches per hour)	3 minutes (inches per hour)						Cu. ft. sec.				Time
1937																			
1/14	# 9	As Above	8	1:30A	Snow	0.08				51	38							No. 3 continued Cultivated 6/21 and 7/6 Cereals plowed under with one-way disk plow 10/22	
"	# 10	"	4	"	"	0.06				"	"								
"	# 11	"	12	"	"	0.06				"	"								
1/19	# 1	"	5	3:00P		0.01				19	25							No. 4 Plot I Wooded area Virgin soil condition Cover of Native Woods and Brush (Undisturbed) Average land slope 4.80%	
"	# 2	"	3	"	"	0.01				"	"								
"	# 3	"	4	"	"	0.01				"	"								
"	# 4	"	7	"	"	0.04				"	"								
"	# 5	"	4	"	"	0.01				"	"								
"	# 6	"	5	"	"	0.01				"	"								
"	# 7	"	5	"	"	0.01				"	"								
"	# 8	"	9	"	"	0.01				"	"								
"	# 9	"	8	"	"	0.02				"	"								
"	# 10	"	4	"	"	0.01				"	"								
"	# 11	"	12	"	"	0.01				"	"								
1/21	# 1	"	5	5:05A	205	0.09				15	14							No. 5 Plot J Soil-Vernon fine sandy loam - Badly gullies and eroded Average land slope 4.44% Cover Native Grass	
"	# 2	"	3	"	"	0.09				"	"								
"	# 3	"	4	"	"	0.09				"	"								
"	# 4	"	7	"	"	0.21				"	"								
"	# 5	"	4	"	"	0.09				"	"								
"	# 6	"	5	"	"	0.09				"	"								
"	# 7	"	5	"	"	0.09				"	"								
"	# 8	"	9	"	"	0.09				"	"								
"	# 9	"	8	"	"	0.16				"	"								
"	# 10	"	4	"	"	0.09				"	"								
"	# 11	"	12	"	"	0.09				"	"								
1/28-29	# 1	"	5	3:30P		Trace				41-52	31-28							No. 6 Terrace 2-B Soil-Vernon fine sandy loam - Eroded phase Average land slope 2.79% Vertical spacing 3.99 ft. Grade 0" to 4" Cultivated to prevent blowing - 3/8 Plowed with moldboard 4" deep - 1/13	
"	# 2	"	3	"	"	Trace				"	"								
"	# 3	"	4	3:30P		Trace				"	"								
"	# 4	"	7	"	"	0.03				"	"								
"	# 5	"	4	"	"	Trace				"	"								
"	# 6	"	5	"	"	Trace				"	"								
"	# 7	"	5	"	"	Trace				"	"								
"	# 8	"	9	"	"	Trace				"	"								
"	# 9	"	8	"	"	0.02				"	"								
"	# 10	"	4	"	"	Trace				"	"								
"	# 11	"	12	"	"	Trace				"	"								
1/29-30	# 1	"	5	11:50P	30	0.04				52-52	28-12							No. 7 Terrace 3-B Soil-Vernon fine sandy loam - Eroded phase Average land slope 4.21% Vertical spacing 3.45 ft. Grade 0" to 6" Cultivated to prevent blowing - 3.9 1/ Sleet and Snow	
"	# 2	"	3	"	"	0.04				"	"								
"	# 3	"	4	"	"	0.04				"	"								
"	# 4	"	7	"	"	0.06				"	"								

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
DIVISION OF RESEARCH

MONTH January-December, 19 37
SHEET 1 OF 20 SHEETS

RECORD OF SINGLE STORMS AND THEIR RUN-OFFS ON VARIOUS WATERSHEDS

PROJECT Outdale, Oklahoma

S. S. KENNEDY, PROJECT ENGINEER

Date	WATERSHED		RAINFALL					TEMPERATURE (degrees F.)			RUN-OFF				Rainfall minus Interception (inches)	Soil Loss (tons per acre)	Comments on Watershed		
	Number	Area (acres)	Gage No.	Begin (hour)	Duration (minutes)	Amount (inches)	MAXIMUM INTENSITY			Maximum	Minimum	Begin (hour)	Ended (hour)	Amount (inches)				MAXIMUM RATE	
							8 minutes (inches per hour)	15 minutes (inches per hour)	30 minutes (inches per hour)									Cu. ft. sec.	Time
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)		
3/1	#1	35	5			0.04				52	34						Ravine A - Watershed No. 1		
"	#2	3.21	3			0.04				"	"						Plot 13 - " " " 2		
"	#3	3.13	4			0.04				"	"						" 15A - " " " 3		
"	#4	5.62	7			0.04				"	"						" L - " " " 4		
"	#5	5.28	4			0.04				"	"						" J - " " " 5		
"	#6	5.99	5			0.04				"	"						Terrace 2B - " " " 6		
"	#7	5.67	5			0.04				"	"						" 3B - " " " 7		
"	#8	2.85	9			0.04				"	"						" 3C - " " " 8		
"	#9	2.58	8	115P	20	0.04				"	"						" 5C - " " " 9		
"	#10	1.20	4			0.04				"	"						" 6E - " " " 10		
"	#11	2.50	12			0.04				"	"						Pasture - " " " 11		
1/7-8	#1	see above	5	2130A	snow	0.26				17-11 12-7							Ravine A No. 1		
"	#2	"	3	"	"	0.26				"	"						Soil-Vernon fine sandy loam -		
"	#3	"	4	"	"	0.16				"	"						eroded phase		
"	#4	"	7	"	"	0.44				"	"						Average land slope about 4.9%		
"	#5	"	4	"	"	0.36				"	"						Approximately 32 acres in cul-		
"	#6	"	5	"	"	0.36				"	"						tivation		
"	#7	"	5	"	"	0.26				"	"						And 3 acres road and drainage		
"	#8	"	9	"	"	0.26				"	"						ditch		
"	#9	"	8	"	"	0.31				"	"						See Terrace 2 and 3B for field		
"	#10	"	4	"	"	0.26				"	"						operations		
"	#11	"	12	"	"	0.26				"	"								
1/9	#1	"	5	9110A	snow	0.04				17	6						No. 2 Plot 13		
"	#2	"	3	9115A	"	0.04				"	"						Soil - Vernon fine sandy loam -		
"	#3	"	4	9110A	"	0.04				"	"						eroded phase		
"	#4	"	7	"	"	0.04				"	"						Average land slope 5.1%		
"	#5	"	4	"	"	0.04				"	"						Unterraced		
"	#6	"	5	"	"	0.04				"	"						Plowed with moldboard plow 6"		
"	#7	"	5	"	"	0.04				"	"						deep 1/7		
"	#8	"	9	"	"	0.04				"	"						Disked 3" deep and harrowed 5/7		
"	#9	"	8	"	"	0.06				"	"						Cowpeas planted 5/10		
"	#10	"	4	"	"	0.04				"	"						Cultivated 6/21 and 7/6		
"	#11	"	12	"	"	0.04				"	"						Cowpeas plowed under with one-		
"		"		"	"	0.04				"	"						way disk 10/22		
1/14	#1	"	5	1130A	snow	0.06				51	38						No. 3 Plot 15A		
"	#2	"	3	"	"	0.06				"	"						Soil - Vernon fine sandy loam -		
"	#3	"	4	"	"	0.06				"	"						eroded phase		
"	#4	"	7	"	"	0.08				"	"						Average land slope 3.4%		
"	#5	"	4	"	"	0.06				"	"						Terraced		
"	#6	"	5	"	"	0.06				"	"						Plowed with moldboard 1/1		
"	#7	"	5	"	"	0.06				"	"						Disked and harrowed 5/7		
"	#8	"	9	"	"	0.06				"	"						Cowpeas planted 5/10		

UNITED STATES DEPARTMENT OF AGRICULTURE
 SOIL CONSERVATION SERVICE
 DIVISION OF RESEARCH
MONTH January - December, 1937SHEET 5 OF 20 SHEETS
 RECORD OF SINGLE STORMS AND THEIR RUN-OFFS ON VARIOUS WATERSHEDS
 Soil Conservation Service
 Research Station
 Project Box 485, Guthrie, Oklahoma
 U. S. GOVERNMENT PRINTING OFFICE 8-1294

Date	WATERSHED			RAINFALL							TEMPERATURES (degrees F.)		Run-off				Basal Area (inches)	Site Loss (tons per acre)	Consensus of Watershed
	Number	Area (acres)	Gage No.	Begin (hour)	Duration (minutes)	Amount (inches)	Maximum Intensity			Minimum	Maximum	Begin (hour)	Ended (hour)	Amount (inches)	Maximum Rate				
							5 minutes (inches per hour)	15 minutes (inches per hour)	30 minutes (inches per hour)						Cu. ft. sec.	Time			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)		
1937																			
3/23	# 9	As Above	8	9:15A	390	0.10	1.08	0.10	0.28	52									
"	# 10	"	11	9:10A	390	0.10	0.96	0.10	0.26	"									
"	# 11	"	12	9:15A	360	0.37	0.96	0.18	0.32	"									
3/29	# 1	"	5	11:00A	SNOW	0.11				37	27								
"	# 2	"	3	"	"	0.16				"	"								
"	# 3	"	4	"	"	0.12				"	"								
"	# 4	"	7	"	"	0.18				"	"								
"	# 5	"	1	"	"	0.12				"	"								
"	# 6	"	5	"	"	0.11				"	"								
"	# 7	"	5	"	"	0.11				"	"								
"	# 8	"	9	"	"	0.15				"	"								
"	# 9	"	8	"	"	0.11				"	"								
"	# 10	"	4	"	"	0.12				"	"								
"	# 11	"	12	"	"	0.16				"	"								
4/3-4	# 1	"	5	9:45A	105	1.17	1.14	2.08	1.06	64	2:25P	8:30P	0.10	11.07	2:55P	0.77			
"	# 2	"	5	"	700	1.17	1.14	2.08	1.06	"	2:30P	5:30P	0.57	13.18	2:40P	0.60	11.75		
"	# 3	"	4	9:45A	915	1.36	5.01	2.32	1.10	"	No Run-off								
"	# 4	"	7	9:50A	900	0.98	3.12	1.36	0.84	"	No Run-off								
"	# 5	"	4	9:45A	703	1.36	5.01	2.32	1.10	"	2:30P	7:00A	0.61	0.66	2:11P	1.30			
"	# 6	"	5	9:45A	703	1.17	1.14	2.08	1.06	"	2:30P	12:00M	0.18	1.20	2:52P	0.53	1.179		
"	# 7	"	5	"	"	1.17	1.14	2.08	1.06	"	2:30P	12:00M	0.18	5.12	2:40P	0.69	0.525		
"	# 8	"	9	9:15A	930	1.10	1.08	1.64	1.04	"	1:44P	11:33P	0.12	0.71	2:10P	0.68	0.537		
"	# 9	"	8	9:15A	915	1.10	1.32	1.76	1.08	"	Trace of Run-off								
"	# 10	"	4	9:15A	915	1.36	5.01	2.32	1.10	"	Trace of Run-off								
"	# 11	"	12	9:55A	900	0.80	1.68	0.88	0.60	"	No Run-off								
4/7	# 1	"	5	"		0.02				75									
"	# 2	"	3	"		0.03				15									
"	# 3	"	4	"		0.04				"									
"	# 4	"	7	"		0.05				"									
"	# 5	"	4	"		0.04				"									
"	# 6	"	5	"		0.02				"									
"	# 7	"	5	"		0.02				"									
"	# 8	"	9	"		0.04				"									
"	# 9	"	8	"		0.04				"									
"	# 10	"	4	"		0.04				"									
"	# 11	"	12	"		0.02				"									
4/20	# 1	"	5	1:45A	915	2.30	3.36	2.64	1.68	64	2:24A	10:54P	0.62	9.65	2:39A	1.68			
"	# 2	"	3	"	890	2.31	2.61	2.10	1.40	"	2:11A	11:32P	0.61	0.77	2:25A	1.67	13.33		
"	# 3	"	4	"	900	2.18	3.12	2.64	1.62	"	2:18A	1:12A	0.15	0.37	1:12P	2.03	0.119		
"	# 4	"	7	"	895	2.18	3.81	2.76	1.66	"	Trace of Run-off								

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RECORD OF SINGLE STORMS AND THEIR RUN-OFFS ON VARIOUS WATERSHEDS

 MONTH January - December, 1937
 SHEET 6 OF 20 SHEETS

DATE		WATERSHED		RAINFALL				TEMPERATURE (Degrees F)				RUN-OFF				RAINFALL MINUS RUN-OFF (Inches)		RIT LOSS (tons per acre)		CONDITION OF WATERBED
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)		
		Number	Area (acres)	Orig. No.	Basin (hour)	Duration (minutes)	Amount (Inches)	MAXIMUM INTEREST (Inches per hour)		TERRAIN (Degrees F)		Basin (hour)	Ended (hour)	Amount (Inches)	MAXIMUM RATE		RIT LOSS (tons per acre)		CONDITION OF WATERBED	
								5 minutes (Inches per hour)	15 minutes (Inches per hour)	30 minutes (Inches per hour)	Maximum	Minimum			Cu. ft. sec.	Time				
1937.	4/20	# 5	As Above	4	1:45A	900	2:48	3:12	2:64	1:62	64	59	2:25A	8:00P	0.14	0.93	2:36P	2.34		
	"	# 6	"	5	"	915	2:30	3:36	2:64	1:68	"	"	2:16A	1:00A	0.68	1.11	4:55P	1.80	0.491	
	"	# 7	"	5	"	915	2:30	3:36	2:64	1:68	"	"	2:18A	12:33A	0.73	2.82	2:32A	1.57	1.519	
	"	# 8	"	9	"	915	2:30	3:36	2:72	1:52	"	"	2:26A	1:11A	1.47	2.32	2:48A	1.89	0.719	
	"	# 9	"	8	"	915	2:48	3:12	2:84	1:78	"	"	2:15A	8:55P	0.84	0.84	2:55A	2.28	0.187	
	"	# 10	"	4	"	900	2:48	3:12	2:64	1:62	"	"	2:23A	7:00P	0.93	0.24	3:48A	2.19	2.261	
	"	# 11	"	12	"	895	2:43	3:06	2:40	1:38	"	"	No Run-off							
	5/4	# 1	"	5	"		0.02				68	54								
	"	# 2	"	3	"		0.01				"	"								
	"	# 3	"	4	"		0.02				"	"								
	"	# 4	"	7	"		0.03				"	"								
5/6	"	# 5	"	4	"		0.02				"	"								
	"	# 6	"	5	"		0.02				"	"								
	"	# 7	"	5	"		0.02				"	"								
	"	# 8	"	5	"		0.04				"	"								
	"	# 9	"	8	"		0.03				"	"								
	"	# 10	"	4	"		0.02				"	"								
	"	# 11	"	12	"		0.04				"	"								
	5/6	# 1	"	5	11:00P	110	0.07				80	44								
	"	# 2	"	3	"	105	0.06				"	"								
	"	# 3	"	4	11:05P	100	0.05				"	"								
	5/8	"	# 4	"	7	11:00P	110	0.08				"	"							
"		# 5	"	4	11:05P	100	0.05				"	"								
"		# 6	"	5	11:00P	110	0.07				"	"								
"		# 7	"	5	"	110	0.07				"	"								
"		# 8	"	9	11:05P	90	0.09				"	"								
"		# 9	"	8	11:05P	100	0.09				"	"								
"		# 10	"	4	11:05P	100	0.05				"	"								
"		# 11	"	12	11:00P	110	0.11				"	"								
5/8		# 1	"	5	1:30A	120	0.14				82	59								
"		# 2	"	3	1:30A	120	0.13				"	"								
"		# 3	"	4	1:30A	120	0.15				"	"								
"	# 4	"	7	1:50A	100	0.15				"	"									
"	# 5	"	4	1:30A	120	0.15				"	"									
"	# 6	"	5	1:30A	120	0.14				"	"									
"	# 7	"	5	1:30A	120	0.14				"	"									
"	# 8	"	9	1:30A	120	0.13				"	"									
"	# 9	"	8	1:30A	120	0.14				"	"									
"	# 10	"	4	1:30A	120	0.15				"	"									
"	# 11	"	12	1:45A	105	0.14				"	"									

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
DIVISION OF RESEARCH

Soil Conservation Service
Project Box 465, Guthrie, Oklahoma

Month January - December, 1937
Sheet 7 OF 20 SHEETS

RECORD OF SINGLE STORMS AND THEIR RUN-OFFS ON VARIOUS WATERSHEDS

Date	WATERSHED		RAINFALL							TEMPERATURE (degrees F)		Run-off				Rainfall minus Run-off (inches)	Soil Loss (tons per acre)	CONDITION OF WATERSHED	
	Number	Area (acres)	Open No.	Basin (feet)	Duration (minutes)	Amount (inches)	MAXIMUM INTENSITY			Minimum	Maximum	Ended (hour)	Amount (inches)	MAXIMUM RATE					
							5 minutes (inches per hour)	15 minutes (inches per hour)	30 minutes (inches per hour)					Cu. ft. sec.	Time				
1937	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
5/10	# 1	As Above	5	6:30P	40	0.19	0.72	0.56	0.32	82	54								
"	# 2	"	3	6:30P	40	0.21	0.96	0.52	0.32	"	"								
"	# 3	"	4	6:10P	25	0.23	0.96	0.64	0.40	"	"								
"	# 4	"	7	6:10P	25	0.18	0.84	0.44	0.24	"	"								
"	# 5	"	4	6:10P	25	0.23	0.96	0.64	0.40	"	"								
"	# 6	"	5	6:30P	40	0.19	0.72	0.56	0.32	"	"								
"	# 7	"	5	6:30P	40	0.19	0.72	0.56	0.32	"	"								
"	# 8	"	9	6:30P	40	0.18	0.96	0.44	0.32	"	"								
"	# 9	"	8	6:30P	35	0.18	0.72	0.44	0.32	"	"								
"	# 10	"	4	6:10P	25	0.23	0.96	0.64	0.40	"	"								
"	# 11	"	12	6:15P	25	0.11	0.72	0.40	0.24	"	"								
5/21	# 1	"	5	10:00P	135	0.21				88	71								
"	# 2	"	3	10:00P	440	0.21				"	"								
"	# 3	"	4	10:00P	140	0.20	1.32	0.44	0.22	"	"								
"	# 4	"	7	10:05P	145	0.21	1.20	0.44	0.22	"	"								
"	# 5	"	4	10:00P	140	0.20	1.32	0.44	0.22	"	"								
"	# 6	"	5	10:00P	135	0.21				"	"								
"	# 7	"	5	10:00P	135	0.21				"	"								
"	# 8	"	9	10:00P	145	0.21	1.20	0.48	0.26	"	"								
"	# 9	"	8	10:00P	145	0.22	1.44	0.52	0.26	"	"								
"	# 10	"	4	10:00P	140	0.20	1.32	0.44	0.22	"	"								
"	# 11	"	12	10:05P	140	0.23	1.32	0.52	0.28	"	"								
5/24	# 1	"	5	8:15A	30	0.06				89	64								
"	# 2	"	3	8:15A	30	0.02				"	"								
"	# 3	"	4	8:25A	10	0.03				"	"								
"	# 4	"	7	8:20A	15	0.07				"	"								
"	# 5	"	4	8:25A	10	0.03				"	"								
"	# 6	"	5	8:15A	30	0.06				"	"								
"	# 7	"	5	8:15A	30	0.06				"	"								
"	# 8	"	9	8:15A	15	0.05				"	"								
"	# 9	"	8	8:15A	15	0.05				"	"								
"	# 10	"	4	8:25A	10	0.03				"	"								
"	# 11	"	12	8:20A	15	0.12				"	"								
5/26	# 1	"	5	4:15A	20	0.05				90	66								
"	# 2	"	3	4:15A	25	0.05				"	"								
"	# 3	"	4	4:15A	20	0.05				"	"								
"	# 4	"	7	4:50A	10	0.07				"	"								
"	# 5	"	4	4:15A	20	0.05				"	"								
"	# 6	"	5	4:15A	20	0.05				"	"								
"	# 7	"	5	4:15A	20	0.05				"	"								
"	# 8	"	9	4:15A	20	0.06				"	"								

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
DIVISION OF RESEARCH

MONTH January - December, 1937
SHEET 8 OF 20 SHEETS

RECORD OF SINGLE STORMS AND THEIR RUN-OFFS ON VARIOUS WATERSHEDS

Soil Conservation Service
Research Station
Project Box 465, Guthrie, Oklahoma

Date	WATERSHED				BLUFAIR						TEMPERATURE (degrees F.)		RUN-OFF				Runoff Minus (inches)	Run Low (loss per acre)	Comments or Remarks
	Number	Area (acres)	Gage No.	Basin (hours)	Duration (minutes)	Amount (inches)	MAXIMUM INTENSITY			Maximum Minimum	Basin (hours)	Raided (hours)	Amount (inches)	MAXIMUM RATE					
							5 minutes (inches per hour)	15 minutes (inches per hour)	30 minutes (inches per hour)					Cu. ft. sec.	Time				
																(6)			
(1)	(2)	(3)	(4)	(5)	(8)	(7)				(11)	(12)	(13)	(14)	(16)	(17)	(18)	(19)		
1937																			
5/26	# 9	As Above	8	4:15A	20E	0.05				90	66								
"	# 10	"	11	4:15A	20	0.05				"	"								
"	# 11	"	12	4:50A	15	0.16				"	"								
5/29	# 1	"	5	10:30P	135	0.30	0.18	0.28	0.26	89	68								
"	# 2	"	3	10:30P	105	0.30	0.72	0.32	0.24	"	"								
"	# 3	"	4	10:25P	130	0.31	0.60	0.24	0.24	"	"								
"	# 4	"	7	10:20P	120	0.30	0.48	0.32	0.22	"	"								
"	# 5	"	4	10:25P	130	0.31	0.60	0.24	0.24	"	"								
"	# 6	"	5	10:30P	135	0.30	0.48	0.28	0.26	"	"								
"	# 7	"	5	10:30P	135	0.30	0.18	0.28	0.26	"	"								
"	# 8	"	9	10:30P	115	0.29	0.48	0.32	0.24	"	"								
"	# 9	"	8	10:30P	135	0.29	0.60	0.32	0.26	"	"								
"	# 10	"	4	10:25P	130	0.31	0.60	0.24	0.24	"	"								
"	# 11	"	12	10:35P	105	0.27	0.72	0.32	0.20	"	"								
6/1	# 1	"	5	6:15A	145	0.29	2.16	0.80	0.50	89	61								
"	# 2	"	3	6:15A	145	0.11				"	"								
"	# 3	"	4	6:15A	35	0.17	1.08	0.44	0.24	"	"								
"	# 4	"	7	6:15A	35	0.36	2.10	0.96	0.52	"	"								
"	# 5	"	4	6:15A	35	0.17	1.08	0.44	0.24	"	"								
"	# 6	"	5	6:15A	145	0.29	2.16	0.80	0.50	"	"								
"	# 7	"	5	6:15A	145	0.29	2.16	0.80	0.50	"	"								
"	# 8	"	9	6:15A	145	0.24	2.16	0.54	0.38	"	"								
"	# 9	"	8	6:15A	145	0.36	2.64	1.12	0.66	"	"								
"	# 10	"	4	6:15A	35	0.17	1.08	0.44	0.24	"	"								
"	# 11	"	12	6:05A	140	0.32	1.68	0.72	0.48	"	"								
6/2	# 1	"	5	4:30P	140	1.10	2.64	1.52	1.44	91	67	5:31P 10:11P	0.02	0.326	7:11P	1.08	Trace		
"	# 2	"	3	4:30P	150	1.44	3.24	1.44	1.40	"	"	4:45P 10:00P	0.17	0.93	6:13P	0.97			
"	# 3	"	4	4:35P	145	1.27	3.12	1.56	1.54	"	"	Trace of Run-off							
"	# 4	"	7	4:35P	140	1.21	2.16	1.56	1.50	"	"	Trace of Run-off							
"	# 5	"	4	4:35P	145	1.27	3.12	1.56	1.54	"	"	4:50P 5:40P	0.02	0.226	5:13P	1.25	Trace		
"	# 6	"	5	4:30P	140	1.10	2.64	1.52	1.44	"	"	4:45P 12:10A	0.14	0.46	6:38P	0.96			
"	# 7	"	5	4:30P	140	1.10	2.64	1.52	1.44	"	"	Trace of Run-off							
"	# 8	"	9	4:30P	140	1.02	1.92	1.28	1.26	"	"	4:51P 9:16P	0.145	1.30	5:31P	0.58	0.046		
"	# 9	"	8	4:30P	130	1.10	3.00	1.60	1.40	"	"	4:52P 11:03P	0.38	0.68	5:35P	0.72	0.015		
"	# 10	"	4	4:35P	145	1.27	3.12	1.56	1.54	"	"	Trace of Run-off							
"	# 11	"	12	4:30P	130	1.10	3.00	1.60	1.40	"	"	No Run-off							
6/3	# 1	"	5	10:35A	25	0.15	0.48	0.32	0.20	84	65								
"	# 2	"	3	10:35A	25	0.15				"	"								
"	# 3	"	4	10:35A	25	0.14	0.60	0.28	0.14	"	"								
"	# 4	"	7	10:35A	25	0.17	1.08	0.40	0.24	"	"								

UNITED STATES DEPARTMENT OF AGRICULTURE
 SOIL CONSERVATION SERVICE
 DIVISION OF RESEARCH

 Soil Conservation Service
 Research Station
 Project, Box 466, Guthrie, Oklahoma

MONTH January - December, 1937

SHEET 9 OF 20 SHEETS

RECORD OF SINGLE STORMS AND THEIR RUN-OFFS ON VARIOUS WATERSHEDS

U. S. GOVERNMENT PRINTING OFFICE 16-1539

U. S. GOVERNMENT PRINTING OFFICE: 1933																		
Date	WATERSHED		RUNOFF						TEMPERATURE (degree F.)		Run-off				Rainfall More than .01 (inches)	Run Loss (tons per acre)	Comments of Watershed	
	Number	Area (acres)	Gage No.	Begin (hour)	Duration (minutes)	Amount (inches)	MAXIMUM INTENSITY			Maximum	Minimum	Peak (hour)	Total (hour)	MAXIMUM RATE				
							8 minutes (inches per hour)	15 minutes (inches per hour)	30 minutes (inches per hour)					Cu. Ft. sec.				Time
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
1937 6/3	# 5	As Above	4	10:35A	25	0.11	0.60	0.29	0.14	64	65							
	# 6	"	5	10:35A	25	0.15	0.48	0.32	0.20	"	"							
	# 7	"	5	10:35A	25	0.15	0.48	0.32	0.20	"	"							
	# 8	"	9	10:35A	25	0.10				"	"							
	# 9	"	8	10:30A	25	0.17	1.20	0.44	0.30	"	"							
	# 10	"	4	10:35A	25	0.14	0.60	0.29	0.14	"	"							
	# 11	"	12	10:35A	25	0.14				"	"							
	# 1	"	5	11:10P	15	0.07				64	65							
	# 2	"	3	11:10P	15	0.03				"	"							
	# 3	"	4	11:10P	20	0.03				"	"							
	# 4	"	7	11:15P	15	0.03				"	"							
6/7	# 5	"	4	11:10P	20	0.03				"	"							
	# 6	"	5	11:10P	15	0.07				"	"							
	# 7	"	5	11:10P	15	0.07				"	"							
	# 8	"	9	11:15P	15	0.10				"	"							
	# 9	"	8	11:15P	10	0.05				"	"							
	# 10	"	4	11:10P	20	0.03				"	"							
	# 11	"	12	11:15P	15	0.08				"	"							
	# 1	"	5	6:15A	60	0.05				85	58							
	# 2	"	3	6:15A	60	0.05				"	"							
	# 3	"	4	6:15A	60	0.06				"	"							
	6/8	# 4	"	7	6:15A	50	0.07				"	"						
# 5		"	4	6:15A	60	0.06				"	"							
# 6		"	5	6:15A	60	0.05				"	"							
# 7		"	5	6:15A	60	0.05				"	"							
# 8		"	9	6:15A	60	0.05				"	"							
# 9		"	8	6:15A	45	0.06				"	"							
# 10		"	4	6:15A	60	0.06				"	"							
# 11		"	12	6:15A	50	0.05				"	"							
# 1		"	5	5:55A	60	0.11				79	64							
# 2		"	3	5:55A	60	0.11				"	"							
# 3		"	4	5:55A	45	0.12				"	"							

UNITED STATES DEPARTMENT OF AGRICULTURE
 SOIL CONSERVATION SERVICE
 DIVISION OF RESEARCH
MONTH January-December, 1937SHEET 10 OF 20 612578

RECORD OF SINGLE STORMS AND THEIR RUN-OFFS ON VARIOUS WATERSHEDS

 PROJECT Outhrie, Oklahoma
 S. L. STEWART, PROJECT LEADER 8-1738

DATE	WATERSHED			RAINFALL						TEMPERATURE (degrees F.)						RUN-OFF				RAINFALL MEASUREMENT (inches)	SOIL LOSS (tons per acre)	COMMENTS OR REMARKS
	Number	Area (acres)	Opp. No.	Depth (inches)	MAXIMUM INTENSITY			Amount (inches)	Began (hour)	Duration (minutes)	Minimum	Maximum	Began (hour)	Ended (hour)	Amount (inches)	MAXIMUM RATE						
					1 minute (inches per hour)	15 minutes (inches per hour)	30 minutes (inches per hour)									Cu. ft. sec.	Time					
1937	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)			
	first storm 6/8-9																					
	#1	as above		5	3:10A	35	0.44	2.10	1.36	0.92	79-87	6:15A	6:55A	0.01	0.719	4:03A	0.43					
	#2	"		3	3:10A	30	0.47	2.52	0.88	0.88	"	3:27A	6:00A	0.09	2.09	3:36A	0.38	0.256				
	#3	"		7	3:05A	35	0.47	1.94	1.32	0.88	"	trace of runoff										
	#4	"		7	3:05A	35	0.53	3.00	1.48	0.96	"	trace of runoff										
	#5	"		4	3:05A	35	0.47	1.94	1.32	0.88	"	trace of runoff										
	#6	"		5	3:10A	35	0.44	2.10	1.36	0.92	"	3:26A	7:12A	0.06	0.22	4:02A	0.38	0.037				
	#7	"		5	3:10A	35	0.44	2.10	1.36	0.92	"	trace of runoff										
	#8	"		9	3:05A	35	0.47	2.10	1.44	0.92	"	trace of runoff										
	#9	"		8	3:05A	40	0.54	3.12	1.56	0.96	"	trace of runoff										
#10	"		4	3:05A	35	0.47	1.94	1.32	0.88	"	trace of runoff											
#11	"		12	3:05A	35	0.49	2.64	1.26	0.92	"	no runoff											
6/9																						
#1	"		5	4:00P		trace					87											
#2	"		3	"		0.02					"											
#3	"		4	"		0.01					"											
#4	"		7	"		0.02					"											
#5	"		4	"		0.01					"											
#6	"		5	"		trace					"											
#7	"		5	"		trace					"											
#8	"		9	"		trace					"											
#9	"		8	"		0.01					"											
#10	"		4	"		0.01					"											
#11	"		12	"		0.01					"											
6/13-14																						
#1	"		5	11:10P	40	0.66	4.32	2.72	1.38		93	11:20P	8:15A	0.118	7.97	11:36P	0.51	not measured				
#2	"		3	11:10P	40	0.61	4.56	2.36	1.18		"	11:11P	11:52P	0.167	4.40	11:18P	0.46	2.88				
#3	"		4	11:10P	20	0.62	3.84	2.32	1.80		"	11:16P	11:00A	0.025	0.18	11:22P	0.60	trace				
#4	"		7	11:10P	20	0.62	4.44	2.44	1.80		"	no run-off						none				
#5	"		5	11:10P	20	0.62	3.84	2.32	1.80		"	11:10P	11:50P	0.043	1.24	11:20P	0.58	not measured				
#6	"		5	11:10P	40	0.66	4.32	2.72	1.38		"	11:16P	11:00A	0.333	6.22	11:26P	0.33	0.859				
#7	"		5	11:10P	40	0.66	4.32	2.72	1.38		"	11:16P	3:17A	0.101	1.57	11:26P	0.56	0.259				
#8	"		9	11:10P	35	0.63	3.60	2.16	1.20		"	11:16P	3:20A	0.240	0.66	11:25P	0.39	0.074				
#9	"		8	11:10P	20	0.71	4.68	2.76	1.40		"	11:22P	4:10A	0.158	0.25	11:40P	0.55	0.122				
#10	"		4	11:10P	20	0.62	3.84	2.32	1.80		"	11:15P	9:10A	0.164	0.28	11:20P	0.46	0.105	2/ duration for 20-minute period			
#11	"		12	11:00	20	0.63	4.52	2.48	1.90		"	no runoff						none				
6/15																						
#1	"		5	11:10A	25	0.29	1.68	1.04			91	11:00A	6:35A	0.048	2.32	2:00A	0.25					
#2	"		3	11:10A	20	0.31	3.28	1.12			"	11:21A	1:55A	0.102	2.32	1:27A	0.21	2.24				
#3	"		4	12:50A	40	0.30	1.04	1.04	0.56		"	11:29A	9:55A	0.036	0.075	1:30A	0.27					
#4	"		7	1:15A	20	0.24	0.72				"	no run-off										
#5	"		4	12:50A	40	0.30	1.04	1.04	0.56		"	trace of run-off										
#6	"		5	11:10A	25	0.29	1.68	1.04			"	11:19A	4:55A	0.109	3.44	1:33A	0.19	0.125				
#7	"		5	11:10A	25	0.29	1.68	1.04			"	11:25A	7:45A	0.105	0.77	1:38A	0.19	0.115				
#8	"		9	11:10A	25	0.28	1.44	0.96			"	11:28A	6:08A	0.087	0.15	1:43A	0.20	0.016				

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
DIVISION OF RESEARCH

Soil Conservation Service
Research Station
Project, Box 465, Guthrie, Oklahoma

MONTH January - December, 1937
SHEET 11 OF 20 SHEETS

RECORD OF SINGLE STORMS AND THEIR RUN-OFFS ON VARIOUS WATERSHEDS

Date	WATERSHED		RAINFALL				TEMPERATURES (degrees F.)			Run-off				RAINFALL MOROS Run-off (inches)	Soil Loss (tons per acre)	CONDITION OF WATERSHED			
	Number	Area (acres)	Gage No.	Begin (hour)	Duration (minutes)	Amount (inches)	MAXIMUM LIQUENT			Minimum	Maximum	Peak (hour)	Rained (hour)				Amount (inches)	MAXIMUM RATE Cu. ft. sec.	Time
							4 minutes (inches per hour)	15 minutes (inches per hour)	30 minutes (inches per hour)										
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)		
6/15	# 9	As Above	8	1:10A	25	0.25	1.20	0.89		91	63	1:39A	9:10A	0.021	0.02	3:10A	0.23		
"	# 10	"	11	12:50A	16	0.30	1.04	1.04	0.56	"	"	1:25A	11:00A	0.109	0.10	1:31A	0.20	Trace	
"	# 11	"	12	1:10A	20	0.19	0.96	0.52		"	"	No Run-off							
6/15-16	# 1	"	5	1:10P	350	0.92	1.66	0.64	0.50	93	70	2:35P	1:05A	0.270	3.08	6:10P	0.65		
"	# 2	"	3	"	"	0.92	1.44	0.56	0.32	"	"	2:35P	4:50A	0.635	2.16	2:11P	0.29	3.542	
"	# 3	"	11	"	"	1.01	1.68	0.64	0.52	"	"	2:30P	10:07A	0.129	0.30	7:10P	0.59	0.076	
"	# 4	"	7	"	"	0.98	1.32	0.60	0.48	"	"	No Run-off							
"	# 5	"	4	"	"	1.01	1.68	0.64	0.52	"	"	Trace of Run-off							
"	# 6	"	5	"	"	0.92	1.66	0.64	0.50	"	"	2:10P	10:20P	0.152	2.09	2:52P	0.17	0.392	
"	# 7	"	5	"	"	0.92	1.66	0.64	0.50	"	"	2:33P	10:57P	0.105	0.99	2:14P	0.52	0.036	
"	# 8	"	9	"	"	0.92	1.20	0.52	0.28	"	"	2:17P	12:10A	0.205	0.125	7:14P	0.72		
"	# 9	"	8	"	"	0.90	1.20	0.64	0.46	"	"	2:52P	2:52A	0.173	0.12	7:30P	0.72	0.007	
"	# 10	"	4	"	"	1.01	1.68	0.64	0.52	"	"	2:10P	7:50A	0.169	0.11	6:20P	0.52	0.137	
"	# 11	"	12	"	375	0.98	1.68	0.72	0.44	"	"	No Run-off							
6/28	# 1	"	5	6:15A	225	0.25	0.48	0.20	0.16	93	70								
"	# 2	"	3	6:10A	225	0.29	0.72	0.40	0.24	"	"								
"	# 3	"	11	6:10A	155	0.30	0.72	0.40	0.22	"	"								
"	# 4	"	7	6:15A	150	0.27	0.60	0.32	0.20	"	"								
"	# 5	"	11	6:10A	155	0.30	0.72	0.40	0.22	"	"								
"	# 6	"	5	6:15A	225	0.25	0.48	0.20	0.16	"	"								
"	# 7	"	5	6:15A	225	0.25	0.48	0.20	0.16	"	"								
"	# 8	"	9	6:10A	150	0.20	0.24	0.16		"	"								
"	# 9	"	8	6:10A	155	0.20	0.24	0.16		"	"								
"	# 10	"	11	6:10A	155	0.30	0.72	0.40	0.22	"	"								
"	# 11	"	12	6:15A	180	0.21	0.36	0.20	0.20	"	"								
7/3	# 1	"	5	1:00P	115	0.11				99	77								
"	# 2	"	3	"	115	0.11				"	"								
"	# 3	"	4	"	115	0.11				"	"								
"	# 4	"	7	"	115	0.11				"	"								
"	# 5	"	11	"	115	0.11				"	"								
"	# 6	"	5	"	115	0.11				"	"								
"	# 7	"	5	"	115	0.11				"	"								
"	# 8	"	9	"	115	0.11				"	"								
"	# 9	"	8	"	115	0.11				"	"								
"	# 10	"	4	"	115	0.11				"	"								
"	# 11	"	12	1:15P	30	0.09				"	"								
7/10	# 1	"	5	5:30A	195	0.25	0.24	0.12	0.08	84	67								
"	# 2	"	3	5:25A	225	0.25	0.24	0.16	0.10	"	"								
"	# 3	"	11	5:30A	210	0.27	0.24	0.16	0.16	"	"								
"	# 4	"	7	5:50A	210	0.26	0.36	0.16	0.10	"	"								

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SHEET 12 OF 20 SHEETS

RECORD OF SINGLE STORMS AND THEIR RUN-OFFS ON VARIOUS WATERSHEDS

Date		WATERSHED		RAINFALL						TEMPERATURES (degrees F.)		ROF-OFF				RAINFALL METERS Non-corr (inches)	Soil Loss (tons per acre)	CONDITION OF WATERBED
(1)	(2)	Area (acres)	Gage No.	Recess (inches)	Duration (minutes)	Amount (inches)	MAXIMUM INTENSITY			Minimum	Soaked (hour)	Soaked (hour)	Amount (inches)	MAXIMUM RATE		(17)	(18)	
							5 minutes (inches per hour)	15 minutes (inches per hour)	30 minutes (inches per hour)					Cu. Ft. sec.	Time			
1937																		
7/10	# 5	As Above	4	5130A	210	0.27	0.24	0.16	0.16	84	67							
"	# 6	"	5	5130A	195	0.24	0.24	0.12	0.09	"	"							
"	# 7	"	5	5130A	195	0.25	0.24	0.12	0.09	"	"							
"	# 8	"	9	5130A	210	0.24	0.18	0.16	0.16	"	"							
"	# 9	"	4	5130A	240	0.25	0.24	0.16	0.16	"	"							
"	# 10	"	4	5130A	210	0.27	0.24	0.16	0.16	"	"							
"	# 11	"	12	5130A	185	0.25	0.36	0.16	0.14	"	"							
7/11	# 1	"	5			0.01				89	69							
"	# 2	"	3			0.01				"	"							
"	# 3	"	4			0.02				"	"							
"	# 4	"	7			0.02				"	"							
"	# 5	"	4			0.02				"	"							
"	# 6	"	5			0.01				"	"							
"	# 7	"	5			0.01				"	"							
"	# 8	"	9			0.01				"	"							
"	# 9	"	8			0.01				"	"							
"	# 10	"	4			0.01				"	"							
"	# 11	"	12			0.04				"	"							
7/13	# 1	"	5	5145P	105	0.53	1.44	0.84	0.72	101	77							
"	# 2	"	3	5140P	105	0.53	1.44	1.00	0.70	"	"							
"	# 3	"	3	5145P	105	0.60	1.80	0.76	0.62	"	"							
"	# 4	"	7	5145P	100	0.61	1.56	1.04	0.84	"	"							
"	# 5	"	4	5145P	105	0.60	1.80	0.76	0.62	"	"							
"	# 6	"	5	5145P	105	0.53	1.44	0.84	0.72	"	"							
"	# 7	"	5	5145P	105	0.53	1.44	0.84	0.72	"	"							
"	# 8	"	9	5145P	90	0.12	1.44	0.88	0.52	"	"							
"	# 9	"	8	5145P	95	0.51	1.20	1.00	0.72	"	"							
"	# 10	"	4	5145P	105	0.60	1.80	0.76	0.62	"	"							
"	# 11	"	12	5150P	100	0.62	1.68	1.00	0.90	"	"							
7/15	# 1	"	5	1430A		0.02				97	72							
"	# 2	"	3	"		0.02				"	"							
"	# 3	"	4	"		0.03				"	"							
"	# 4	"	7	"		0.04				"	"							
"	# 5	"	4	"		0.03				"	"							
"	# 6	"	5	"		0.02				"	"							
"	# 7	"	5	"		0.02				"	"							
"	# 8	"	9	"		0.02				"	"							
"	# 9	"	8	"		0.02				"	"							
"	# 10	"	4	"		0.03				"	"							
"	# 11	"	12	1435A	5	0.06				"	"							

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
DIVISION OF RESEARCH

Soil Conservation Service
Research Station
Project Box 485, Guthrie, Oklahoma

MONTH January - December, 1937
SHEET 13 OF 20 SHEETS

RECORD OF SINGLE STORMS AND THEIR RUN-OFFS ON VARIOUS WATERSHEDS

Date	WATERSHED		RAINFALL						TEMPERATURE (degrees F.)				RUN-OFF				Rainfall Minus Run-off (inches)	Six Low (tons per acre)	Condition of Watershed
	Number	Area (acres)	Gage No.	Begin (hour)	Duration (minutes)	Amount (inches)	MAXIMUM INTENSITY			Minimum	Maximum	Began (hour)	Ended (hour)	Amount (inches)	MAXIMUM RATE				
							5 minutes (inches per hour)	15 minutes (inches per hour)	30 minutes (inches per hour)						Cu. ft. sec.	Time			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	
1937	# 1	As Above	5			0.01				102	75								
7/28	# 2	"	3			0.01				"	"								
"	# 3	"	4			0.01				"	"								
"	# 4	"	7			0.01				"	"								
"	# 5	"	4			0.01				"	"								
"	# 6	"	5			0.01				"	"								
"	# 7	"	5			0.01				"	"								
"	# 8	"	9			0.01				"	"								
"	# 9	"	8			0.01				"	"								
"	# 10	"	4			0.01				"	"								
"	# 11	"	12			0.01				"	"								
7/29	# 1	"	5	5:00A	50	0.05				83	73								
"	# 2	"	3	5:00A	50	0.05				"	"								
"	# 3	"	4	5:05A	50	0.06				"	"								
"	# 4	"	7	5:05A	45	0.05				"	"								
"	# 5	"	4	5:05A	50	0.06				"	"								
"	# 6	"	5	5:00A	50	0.05				"	"								
"	# 7	"	5	5:00A	50	0.05				"	"								
"	# 8	"	9	5:00A	50	0.04				"	"								
"	# 9	"	8	4:55A	50	0.04				"	"								
"	# 10	"	4	5:05A	50	0.06				"	"								
"	# 11	"	12	5:05A	50	0.06				"	"								
7/30	# 1	"	5	3:20A	65	0.19	0.18	0.28	0.18	95	72								
"	# 2	"	3	3:20A	60	0.20	0.72	0.32	0.20	"	"								
"	# 3	"	4	3:20A	65	0.20	0.60	0.40	0.20	"	"								
"	# 4	"	7	3:20A	75	0.20	0.62	0.32	0.20	"	"								
"	# 5	"	4	3:20A	65	0.20	0.60	0.40	0.20	"	"								
"	# 6	"	5	3:20A	65	0.19	0.48	0.28	0.18	"	"								
"	# 7	"	5	3:20A	65	0.19	0.48	0.28	0.18	"	"								
"	# 8	"	9	3:20A	65	0.18	0.48	0.32	0.20	"	"								
"	# 9	"	8	3:15A	75	0.19	0.48	0.32	0.18	"	"								
"	# 10	"	4	3:20A	65	0.20	0.60	0.40	0.20	"	"								
"	# 11	"	12	3:20A	65	0.19	0.60	0.24	0.22	"	"								
8/8	# 1	"	5	3:00A		0.02				109	77								
"	# 2	"	3	"		0.01				"	"								
"	# 3	"	4	"		0.01				"	"								
"	# 4	"	7	"		0.02				"	"								
"	# 5	"	4	"		0.01				"	"								
"	# 6	"	5	"		0.02				"	"								
"	# 7	"	5	"		0.02				"	"								
"	# 8	"	9	"		0.02				"	"								

RECORD OF SINGLE STORMS AND THEIR RUN-OFFS ON VARIOUS WATERSHEDS

U. S. GOVERNMENT PRINTING OFFICE: 1969 O-333-1

Date	WATERED			BLUFAILL							TERRACE			Run-off				Rainfall Measured (inches)	Run Low (days per year)	CONDITION OF WATERSHED
	Number	Area (acres)	Open No.	Begin (hour)	Duration (min.-sec)	Amount (inches)	MAXIMUM INTENSITY			Maximum	Minimum	Peak (hour)	Amount (inches)	MAXIMUM RATE						
							3 minutes (inches per hour)	15 minutes (inches per hour)	30 minutes (inches per hour)					Cu. ft. sec.	Time					
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(18)	(19)			
1937																				
8/8	# 9	As Above	8	3:100A		0.02				109	77									
	# 10	"	"	"	"	0.01				"	"									
	# 11	"	12	"	"	0.03				"	"									
	# 1	"	5	4:00A	60	0.28	0.72	0.14	0.36	102	72									
8/11	# 2	"	3	"	"	0.31	1.20	0.56	0.16	"	"									
	# 3	"	"	"	"	0.35	1.20	0.68	0.16	"	"									
	# 4	"	7	"	"	0.34	0.72	0.56	0.14	"	"									
	# 5	"	4	"	"	0.35	1.20	0.68	0.16	"	"									
	# 6	"	5	"	"	0.28	0.72	0.14	0.36	"	"									
	# 7	"	5	"	"	0.28	0.72	0.14	0.36	"	"									
	# 8	"	9	"	"	0.29	0.96	0.14	0.30	"	"									
	# 9	"	8	"	65	0.26	0.72	0.32	0.32	"	"									
	# 10	"	4	"	60	0.35	1.20	0.68	0.16	"	"									
	# 11	"	12	"	55	0.32	0.84	0.14	0.32	"	"									
	8/13	# 1	"	5	8:10P	10	0.05				102	73								
# 2		"	3	8:00P	15	0.08				"	"									
# 3		"	4	8:05P	20	0.08				"	"									
# 4		"	7	8:10P	10	0.06				"	"									
# 5		"	4	8:05P	20	0.08				"	"									
# 6		"	5	8:10P	10	0.05				"	"									
# 7		"	5	8:10P	10	0.05				"	"									
# 8		"	9	8:00P	10	0.02				"	"									
# 9		"	8	8:00P	10	0.03				"	"									
# 10		"	4	8:05P	20	0.08				"	"									
# 11		"	12	8:05P	20	0.04				"	"									
8/20-21	# 1	"	5	1:18P	1787	4.57	2.88	2.16	1.94	93-74	74-69	1:55P	8:00P	1.601	2.97	19.159				
	# 2	"	3	1:18P	1787	4.87	3.36	2.32	1.88	"	"	1:23P	3:10P	0.99	3.88	0.175				
	# 3	"	4	1:20P	1780	4.53	3.84	2.08	1.76	"	"	1:23P	2:50A	1.453	3.08					
	# 4	"	7	1:10P	1780	4.36	3.36	2.32	2.08	"	"	No Run-off								
	# 5	"	4	1:18P	1780	4.53	3.84	2.08	1.76	"	"	2:10P	3:35P	0.05	1.48					
	# 6	"	5	1:18P	1787	4.57	2.88	2.16	1.94	"	"	1:10P	9:00A	2.23	2.34	2.32				
	# 7	"	5	1:18P	1787	4.57	2.88	2.16	1.94	"	"	2:02P	5:02A	1.88	2.57A	2.55				
	# 8	"	9	1:15P	1780	4.74	3.60	2.00	1.80	"	"	1:55P	10:27P	1.78	3.08	2:16P	0.552			
	# 9	"	8	1:15P	1815	4.65	3.60	2.32	2.08	"	"	1:16P	10:10A	1.668	1.66	2:58P	0.403			
	# 10	"	4	1:20P	1780	4.53	3.84	2.08	1.76	"	"	1:50P	5:00P	2.189	1.10	2:12A	0.413			
	# 11	"	12	1:20P	1690	4.13	3.36	2.28	1.80	"	"	No Run-off								
8/22	# 1	"	5	2:30P		0.04				83	70									
	# 2	"	3	"		0.02				"	"									
	# 3	"	4	"		0.04				"	"									
	# 4	"	7	"		0.03				"	"									

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
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Soil Conservation Service
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MONTH January - December, 1937
SHEET 15 OF 20 SHEETS

RECORD OF SINGLE STORMS AND THEIR RUN-OFFS ON VARIOUS WATERSHEDS

Date	WATERSHED			RAINFALL							TEMPERATURE (degrees F.)		RUN-OFF				Bare All Meters Run-off (inches)	Btu Loss (cal per acre)	Conversion of Watershed
	Number	Area (acres)	Open No.	Basin (feet)	Duration (minutes)	Amount (inches)	MAXIMUM LEVANT			Maximum	Minimum	Began (hour)	Ended (hour)	Amount (inches)	MAXIMUM RATE				
							8 minutes (inches per hour)	18 minutes (inches per hour)	30 minutes (inches per hour)						Cu. ft. sec.	Time			
1937	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
8/22	# 5	As Above	"	1	2:30P	"	0.04				83	70							
"	# 6	"	"	5	"	"	0.04				"	"							
"	# 7	"	"	5	"	"	0.04				"	"							
"	# 8	"	"	9	"	"	0.08				"	"							
"	# 9	"	"	8	"	15	0.05				"	"							
"	# 10	"	"	4	"	"	0.04				"	"							
"	# 11	"	"	12	"	"	0.05				"	"							
8/31	# 1	"	"	5	3:00P	150	0.11				91	69							
"	# 2	"	"	3	"	150	0.10				"	"							
"	# 3	"	"	4	"	150	0.11				"	"							
"	# 4	"	"	7	"	125	0.14				"	"							
"	# 5	"	"	4	"	150	0.11				"	"							
"	# 6	"	"	5	"	150	0.11				"	"							
"	# 7	"	"	5	"	150	0.11				"	"							
"	# 8	"	"	9	"	150	0.09				"	"							
"	# 9	"	"	8	"	130	0.12				"	"							
"	# 10	"	"	4	"	150	0.11				"	"							
"	# 11	"	"	12	3:05P	135	0.10				"	"							
9/1	# 1	"	"	5	3:30P	50	0.15	0.72	0.40	0.20	94	71							
"	# 2	"	"	3	3:30P	50	0.13	1.32	0.52	0.26	"	"							
"	# 3	"	"	4	3:40P	50	0.15				"	"							
"	# 4	"	"	7	3:30P	40	0.24	1.20	0.72	0.38	"	"							
"	# 5	"	"	4	3:40P	50	0.15				"	"							
"	# 6	"	"	5	3:30P	50	0.15	0.72	0.40	0.20	"	"							
"	# 7	"	"	5	3:30P	50	0.15	0.72	0.40	0.20	"	"							
"	# 8	"	"	9	3:40P	30	0.13				"	"							
"	# 9	"	"	8	3:40P	50	0.15				"	"							
"	# 10	"	"	4	3:40P	50	0.15				"	"							
"	# 11	"	"	12	3:40P	30	0.25	1.68	0.80	0.40	"	"							
9/7	# 1	"	"	5	4:10P	55	0.32	2.16	0.80	0.32	85	70							
"	# 2	"	"	3	"	55	0.28	2.16	0.76	0.30	"	"							
"	# 3	"	"	4	"	30	0.20	1.68	0.84	0.32	"	"							
"	# 4	"	"	7	"	30	0.38	2.28	1.20	0.70	"	"							
"	# 5	"	"	4	"	50	0.30	1.68	0.84	0.32	"	"							
"	# 6	"	"	5	"	55	0.32	2.16	0.80	0.32	"	"							
"	# 7	"	"	5	"	55	0.32	2.16	0.80	0.32	"	"							
"	# 8	"	"	9	"	45	0.32	2.16	1.04	0.58	"	"							
"	# 9	"	"	8	"	45	0.32	2.16	1.08	0.64	"	"							
"	# 10	"	"	4	"	50	0.30	1.68	0.84	0.32	"	"							
"	# 11	"	"	12	"	50	0.68	2.16	0.80	0.52	"	"							

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
DIVISION OF RESEARCH

Soil Conservation Service
Research Station
Project—Box 465, Guthrie, Oklahoma

MONTH—January—December—1937
SHEET—16—OF—20—SHEETS

RECORD OF SINGLE STORMS AND THEIR RUN-OFFS ON VARIOUS WATERSHEDS

DATE	WATERSHED				RUNOFF				TRANSFORMED (CROSS F.)				ROB-COFF				RUNOFF METER (inches)	SOIL LOSS (tons per acre)	CONDITION OF WATERBED
	Number	Area (acres)	Gage No.	Basin (hours)	Duration (minutes)	Amount (inches)	MAXIMUM INTENSITY			Maximum	Minimum	Basin (hours)	Peak (hours)	Amount (inches)	Cu. ft. sec.	Time			
							1 minute (inches per hour)	15 minutes (inches per hour)	30 minutes (inches per hour)										
1937	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	
9/8	# 1	As Above	5	8:25A	205	0.20					89	73							
"	# 2	"	3	8:25A	205	0.22					"	"							
"	# 3	"	4	8:25A	200	0.24					"	"							
"	# 4	"	7	8:20A	220	0.22					"	"							
"	# 5	"	4	8:25A	200	0.24					"	"							
"	# 6	"	5	8:25A	205	0.20					"	"							
"	# 7	"	5	8:25A	205	0.20					"	"							
"	# 8	"	9	8:25A	205	0.18					"	"							
"	# 9	"	8	8:20A	220	0.24					"	"							
"	# 10	"	4	8:25A	200	0.24					"	"							
"	# 11	"	12	8:25A	200	0.22					"	"							
9/9	# 1	"	5	8:50A	140	0.19		0.60	0.36	0.22	90	72							
"	# 2	"	3	8:15A	145	0.02		0.72	0.10	0.24	"	"							
"	# 3	"	4	8:50A	140	0.21		0.60	0.14	0.26	"	"							
"	# 4	"	7	8:50A	140	0.22		0.72	0.14	0.24	"	"							
"	# 5	"	4	8:50A	140	0.21		0.60	0.14	0.26	"	"							
"	# 6	"	5	8:50A	140	0.19		0.60	0.36	0.22	"	"							
"	# 7	"	5	8:50A	140	0.19		0.60	0.36	0.22	"	"							
"	# 8	"	9	8:15A	140	0.22		0.72	0.18	0.32	"	"							
"	# 9	"	8	8:15A	145	0.19		0.18	0.72	0.24	"	"							
"	# 10	"	4	8:50A	140	0.21		0.60	0.14	0.26	"	"							
"	# 11	"	12	8:50A	140	0.21		0.72	0.10	0.24	"	"							
9/10	# 1	"	5	6:15A	110	0.33		0.72	0.52	0.30	83	70							
"	# 2	"	3	"	105	0.32		0.96	0.32	0.32	"	"							
"	# 3	"	4	"	105	0.32		0.96	0.18	0.32	"	"							
"	# 4	"	7	"	105	0.34		0.72	0.52	0.36	"	"							
"	# 5	"	4	"	105	0.32		0.96	0.18	0.32	"	"							
"	# 6	"	5	"	110	0.33		0.72	0.52	0.30	"	"							
"	# 7	"	5	"	110	0.33		0.72	0.52	0.30	"	"							
"	# 8	"	9	"	110	0.37		1.20	0.72	0.40	"	"							
"	# 9	"	8	"	105	0.38		0.96	0.52	0.12	"	"							
"	# 10	"	4	"	105	0.32		0.96	0.18	0.32	"	"							
"	# 11	"	12	"	110	0.12		0.96	0.68	0.16	"	"							
9/14	# 1	"	5	4:30A	195	0.08					83	60							
"	# 2	"	3	4:30A	195	0.08					"	"							
"	# 3	"	4	4:10A	195	0.09					"	"							
"	# 4	"	7	4:10A	195	0.08					"	"							
"	# 5	"	4	4:10A	195	0.09					"	"							
"	# 6	"	5	4:30A	195	0.08					"	"							
"	# 7	"	5	4:30A	195	0.08					"	"							
"	# 8	"	5	4:30A	195	0.09					"	"							

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
 DIVISION OF RESEARCH

Soil Conservation Service
 Research Station
 Project Box 485, Guthrie, Oklahoma

RECORD OF SINGLE STORMS AND THEIR RUN-OFFS ON VARIOUS WATERSHEDS

MONTH January - December, 1937

SHEET 17 OF 20 SHEETS

Date	Watershed Number	Area (acres)	Gage No.	Begin (hour)	Duration (minutes)	Amount (inches)	MAXIMUM INTENSITY			THRESHOLD (inches)		Run-off			Run-off (inches)	Run-off (inches per acre)	Condition of Watershed
							1 minute (inches per hour)	5 minutes (inches per hour)	15 minutes (inches per hour)	Maximum	Minimum	Peak (inches)	Retard (inches)	Amount (inches)			
							(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
1937	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(18)
9/14	# 9	As Above	6	4:30A	195	0.09				83	60						
"	# 10	"	11	4:10A	195	0.09				"	"						
"	# 11	"	12	4:10A	185	0.07				"	"						
9/16	# 1	"	5	11:25P		0.02				78	59						
"	# 2	"	3	"		0.01				"	"						
"	# 3	"	4	"		0.01				"	"						
"	# 4	"	7	"		0.02				"	"						
"	# 5	"	4	"		0.01				"	"						
"	# 6	"	5	"		0.02				"	"						
"	# 7	"	5	"		0.02				"	"						
"	# 8	"	9	"		0.02				"	"						
"	# 9	"	8	"		0.02				"	"						
"	# 10	"	11	"		0.01				"	"						
"	# 11	"	12	"		0.03				"	"						
9/24	# 1	"	5	2:10A	20	0.18	0.96	0.36		78	68						
"	# 2	"	3	"	20	0.18	1.20	0.56		"	"						
"	# 3	"	4	"	20	0.15	1.08	0.44		"	"						
"	# 4	"	7	2:30A	20	0.15	0.72	0.44		"	"						
"	# 5	"	4	2:10A	20	0.15	1.08	0.44		"	"						
"	# 6	"	5	"	20	0.18	0.96	0.36		"	"						
"	# 7	"	5	"	20	0.18	0.96	0.36		"	"						
"	# 8	"	9	"	20	0.19	0.96	0.56		"	"						
"	# 9	"	8	"	20	0.20	0.96	0.52		"	"						
"	# 10	"	4	"	20	0.15	1.08	0.44		"	"						
"	# 11	"	12	2:15A	15	0.16	0.72	0.48		"	"						
10/8	# 1	"	5	2:30P	565	1.03	1.32	0.56	0.38	69	50						
"	# 2	"	3	2:15P	560	1.05	1.20	0.56	0.40	"	"						
"	# 3	"	4	2:10P	560	1.05	0.72	0.40	0.24	"	"						
"	# 4	"	7	2:10P	570	0.99	0.72	0.60	0.44	"	"						
"	# 5	"	4	2:10P	560	1.05	0.72	0.40	0.24	"	"						
"	# 6	"	5	2:30P	565	1.03	1.32	0.56	0.38	"	"						
"	# 7	"	5	2:30P	565	1.03	1.32	0.56	0.38	"	"						
"	# 8	"	9	2:20P	560	0.93	1.20	0.56	0.44	"	"						
"	# 9	"	8	2:15P	560	1.00	1.32	0.60	0.52	"	"						
"	# 10	"	4	2:10P	560	1.05	0.72	0.40	0.24	"	"						
"	# 11	"	12	2:20P	560	0.97	1.32	0.56	0.52	"	"						
10/12	# 1	"	5	12:30P	330	0.35	0.24	0.12	0.10	61	57						
"	# 2	"	3	"	360	0.37	0.24	0.08	0.08	"	"						
"	# 3	"	4	"	360	0.37	0.12	0.08	0.08	"	"						
"	# 4	"	7	"	360	0.37	0.24	0.16	0.12	"	"						

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
DIVISION OF RESEARCH

Soil Conservation Service
Research Station
Project Box 466, Guthrie, Oklahoma
U. S. GOVERNMENT PRINTING OFFICE 8-1395

RECORD OF SINGLE STORMS AND THEIR RUN-OFFS ON VARIOUS WATERSHEDS

Month January - December, 1937
Sheet 18 of 20 SHEETS

Date	WATERSHED			RAINFALL					TEMPERATURE (degrees F.)		Run-off				Rapidly Mined (inches)	Silt Loss (tons per acre)	Comments or Watershed	
	Number	Area (acres)	Gage No.	Begin (hour)	Duration (minutes)	Amount (inches)	Maximum Intensity			Maximum Minimum	Began (hour)	Ended (hour)	Amount (inches)	Maximum Rate				
							2 minutes (inches per hour)	15 minutes (inches per hour)	30 minutes (inches per hour)					Cu. ft. sec.				Time
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	
1937																		
10/12	# 5	As Above	1	12:30P	360	0.37	0.12	0.08	0.08	61								
"	# 6	"	5	"	330	0.35	0.24	0.12	0.10	"								
"	# 7	"	5	"	330	0.35	0.24	0.12	0.10	"								
"	# 8	"	9	"	375	0.33	0.24	0.12	0.08	"								
"	# 9	"	8	"	360	0.35	0.24	0.12	0.08	"								
"	# 10	"	4	"	360	0.37	0.12	0.08	0.08	"								
"	# 11	"	12	1:30P	245	0.37	0.24	0.12	0.10	"								
10/16-17	# 1	"	5	7:15P	810	0.32	0.72	0.32	0.24	62-65								
"	# 2	"	3	7:30P	750	0.33	0.96	0.40	0.26	"								
"	# 3	"	4	7:45P	750	0.37	0.72	0.44	0.26	"								
"	# 4	"	7	7:30P	750	0.36	0.72	0.40	0.28	"								
"	# 5	"	4	7:15P	750	0.37	0.72	0.44	0.26	"								
"	# 6	"	5	7:15P	810	0.32	0.72	0.32	0.24	"								
"	# 7	"	5	7:15P	810	0.32	0.72	0.32	0.24	"								
"	# 8	"	9	7:30P	780	0.31	0.72	0.36	0.24	"								
"	# 9	"	8	7:30P	765	0.33	0.66	0.40	0.24	"								
"	# 10	"	4	7:15P	750	0.37	0.72	0.44	0.26	"								
"	# 11	"	12	7:30P	810	0.35	0.48	0.36	0.27	"								
10/18	# 1	"	5	9:15P	60	0.05				74								
"	# 2	"	3	9:15P	60	0.06				"								
"	# 3	"	4	9:10P	50	0.06				"								
"	# 4	"	7	9:15P	45	0.06				"								
"	# 5	"	4	9:10P	50	0.06				"								
"	# 6	"	5	9:15P	60	0.05				"								
"	# 7	"	5	9:15P	60	0.05				"								
"	# 8	"	9	9:15P	45	0.06				"								
"	# 9	"	8	9:15P	40	0.05				"								
"	# 10	"	4	9:10P	50	0.06				"								
"	# 11	"	12	9:20P	45	0.05				"								
11/4	# 1	"	5	6:15A	20	0.04				62								
"	# 2	"	3	"	20	0.05				"								
"	# 3	"	4	"	15	0.05				"								
"	# 4	"	7	"	15	0.05				"								
"	# 5	"	4	"	15	0.05				"								
"	# 6	"	5	"	20	0.04				"								
"	# 7	"	5	"	20	0.04				"								
"	# 8	"	9	"	20	0.04				"								
"	# 9	"	8	"	15	0.05				"								
"	# 10	"	4	"	15	0.05				"								
"	# 11	"	12	"	10	0.04				"								

UNITED STATES DEPARTMENT OF AGRICULTURE
 SOIL CONSERVATION SERVICE
 DIVISION OF RESEARCH

 Soil Conservation Service
 Research Station
 Project Box 466, Guthrie, Oklahoma
 S. S. SCHNEIDER, DIRECTOR

 MONTH January - December, 1937
 SHEET 19 OF 20 SHEETS

RECORD OF SINGLE STORMS AND THEIR RUN-OFFS ON VARIOUS WATERSHEDS

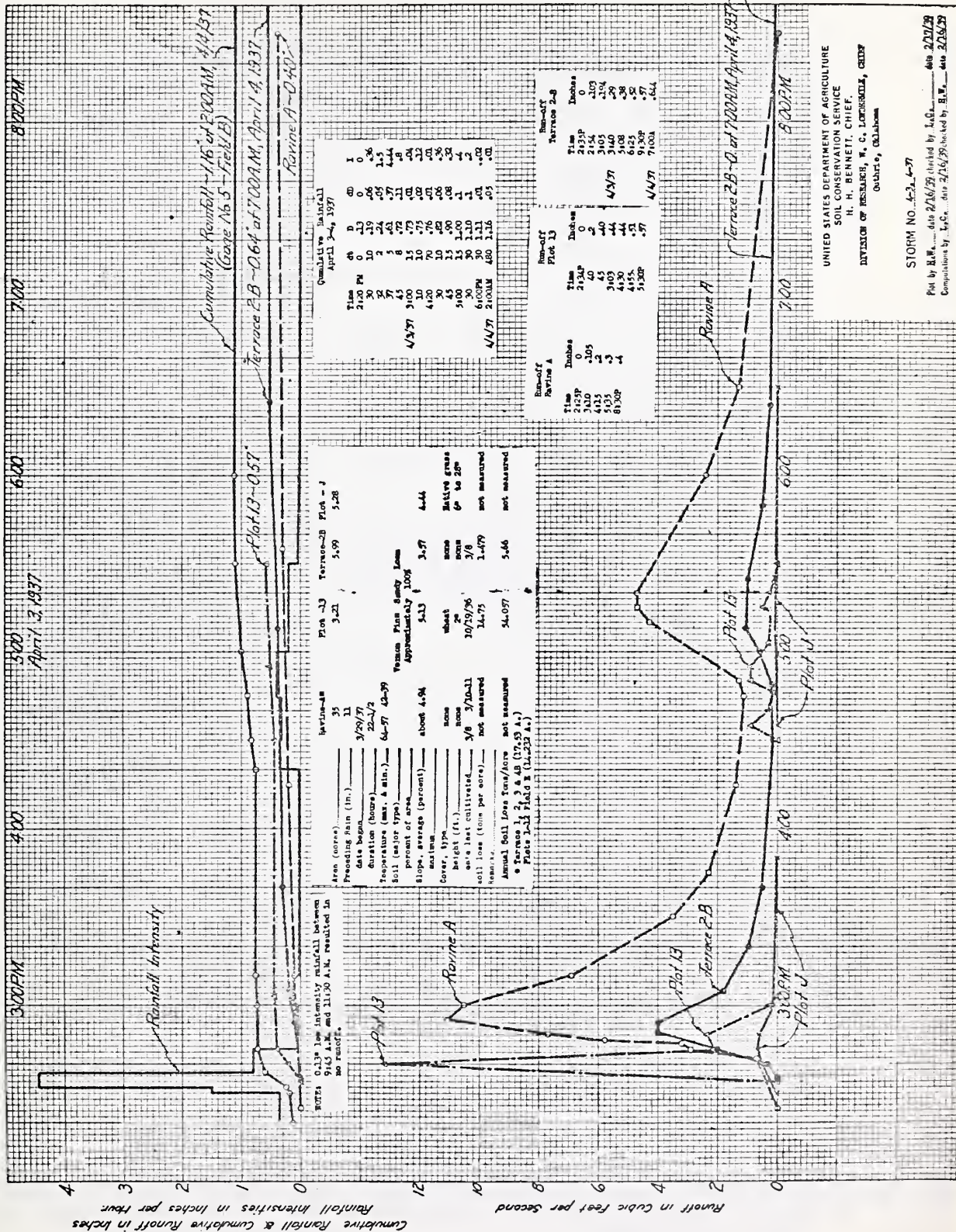
DATE	WATERSHED			RUNOFF				TEMPERATURE (Degree F.)			RUN-OFF			RAINFALL MEASUREMENT (inches)	Silt Loss (tons per acre)	Comments of Watershed		
	Number	Area (acres)	Gage No.	Peak (hour)	Duration (minutes)	Amount (inches)	MAXIMUM LEVELOCITY			Maximum	Minimum	Peak (hour)	Total (hour)				Amount (inches)	Time
							8 minutes (inches per hour)	16 minutes (inches per hour)	30 minutes (inches per hour)									
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
1937																		
11/9-10	# 1	AB ABOVE	5	12:15P	585	1.22	0.84	0.56	0.36	57-69	16-15							
"	# 2	"	3	12:15P	585	1.21	0.72	0.44	0.34	"	"							
"	# 3	"	4	12:15P	590	1.34	0.84	0.48	0.32	"	"							
"	# 4	"	7	12:10P	595	1.23	0.84	0.52	0.36	"	"							
"	# 5	"	4	12:15P	590	1.34	0.84	0.48	0.32	"	"							
"	# 6	"	5	12:15P	585	1.22	0.84	0.56	0.36	"	"							
"	# 7	"	5	12:15P	585	1.22	0.84	0.56	0.36	"	"							
"	# 8	"	9	12:15P	590	1.23	0.96	0.56	0.34	"	"							
"	# 9	"	8	12:15P	590	1.34	0.84	0.48	0.32	"	"							
"	# 10	"	4	12:15P	590	1.34	0.84	0.48	0.32	"	"							
"	# 11	"	12	12:10P	590	1.10	0.84	0.40	0.26	"	"							
11/15	# 1	"	5	1:00P	270 ^{3/4}	0.20				53	40							
"	# 2	"	3	1:00P	270	0.20				"	"							
"	# 3	"	4	1:05P	255	0.25				"	"							
"	# 4	"	7	1:00P	285	0.20				"	"							
"	# 5	"	4	1:05P	255	0.25				"	"							
"	# 6	"	5	1:00P	270	0.20				"	"							
"	# 7	"	5	1:00P	270	0.20				"	"							
"	# 8	"	9	1:00P	255	0.21				"	"							
"	# 9	"	8	1:00P	435	0.21				"	"							
"	# 10	"	4	1:05P	255	0.25				"	"							
"	# 11	"	12	1:00P		0.16				"	"							
11/27	# 1	"	5	Snow		Trace				43	34							
"	# 2	"	3	"		Trace				"	"							
"	# 3	"	4	"		0.02				"	"							
"	# 4	"	7	"		0.04				"	"							
"	# 5	"	4	"		0.02				"	"							
"	# 6	"	5	"		Trace				"	"							
"	# 7	"	5	"		Trace				"	"							
"	# 8	"	9	"		0.04				"	"							
"	# 9	"	8	"		Trace				"	"							
"	# 10	"	4	"		0.02				"	"							
"	# 11	"	12	"		0.01				"	"							
12/3	# 1	"	5	1:15A	195	0.10				48	33							
"	# 2	"	3	"	195	0.11				"	"							
"	# 3	"	4	"	255	0.11				"	"							
"	# 4	"	7	1:30A	255	0.12				"	"							
"	# 5	"	4	1:15A	255	0.11				"	"							
"	# 6	"	5	"	195	0.10				"	"							
"	# 7	"	5	"	195	0.10				"	"							
"	# 8	"	9	"	225	0.09				"	"							

 3/ This rain was partly
 sleet and snow.

Soil Conservation Service
Research Station
Project Box 465, Guthrie, Oklahoma

RECORD OF SINGLE STORMS AND THEIR RUN-OFFS ON VARIOUS WATERSHEDS

[illegible]

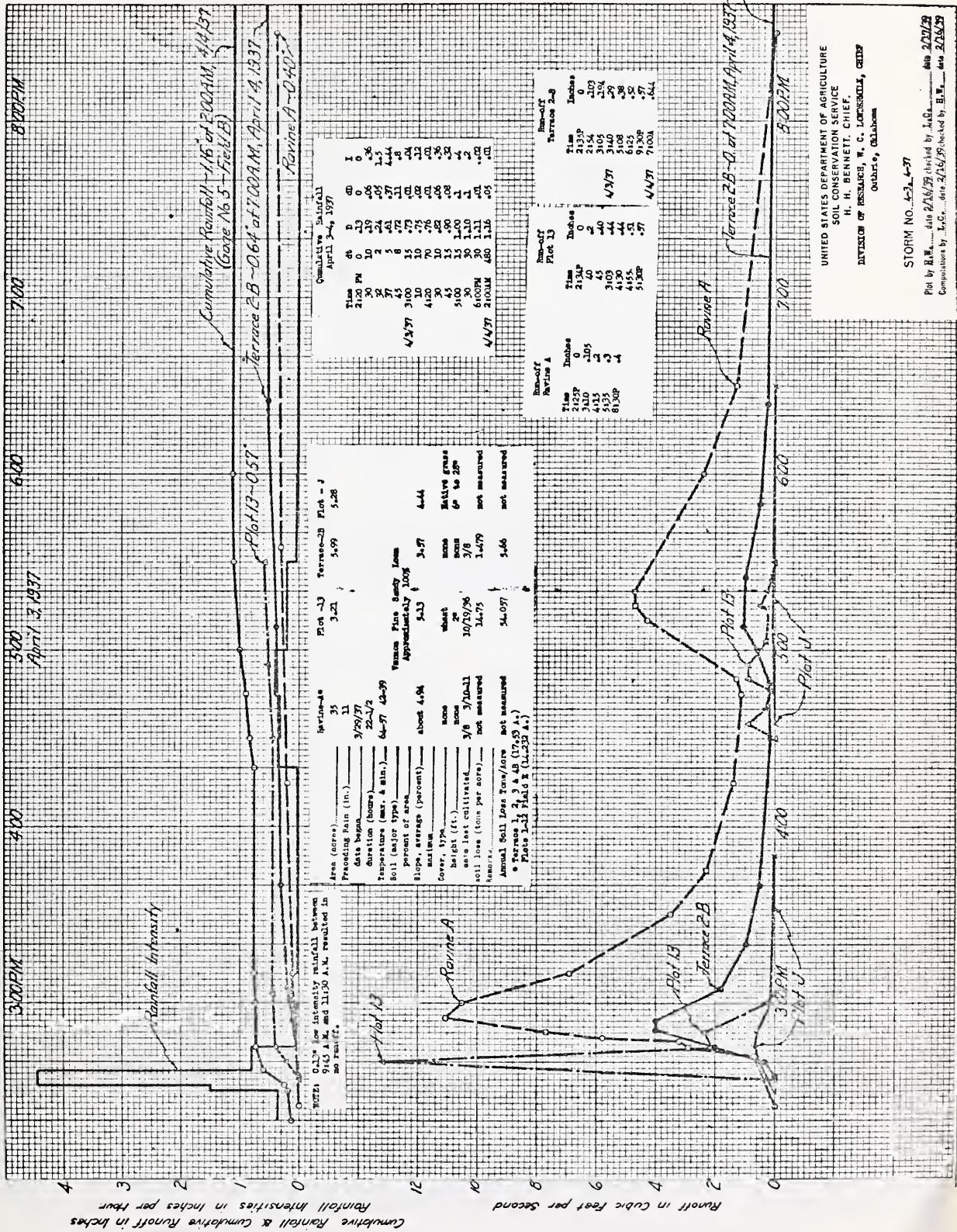


UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
H. H. BENNETT, CHIEF
DIVISION OF RESEARCH, W. C. LONGWORTH, CHIEF
Olathe, Kansas

STORM NO. 4-3, 4-7

Plot by H.H. ... date 2/16/37 checked by L.G. ... date 2/20/39
Compiled by L.G. ... date 2/16/39 checked by H.H. ... date 2/16/39

GEORGE, Olathe



Cumulative Rainfall & Cumulative Runoff in inches

Runoff in Cubic Feet per Second

NOTES: 0.1" low intensity rainfall between 9:15 A.M. and 11:20 A.M. resulted in no runoff.

Area (acres).....	35
Preceding Rain (in.).....	1
Station.....	3/29/37
Duration (hours).....	22 1/2
Temperature (max. & min.).....	64-77 43-39
Soil (major type).....	about 4.5%
Percent of area.....	maximum
Slopes, average (percent).....	about 4.5%
Cover, type.....	none
height (ft.).....	none
and last cultivated.....	3/8 5/10/36
soil loss (ton per acre).....	not measured
Remarks.....	not measured
Annual Soil Loss Ton/acre.....	not measured
• Terrace 1, 2, 3 & 4B (17.53 A.)	
• Plots 1-13 Field 2 (11.233 A.)	

Plot 13	Plot 13	Plot 13
Area (acres).....	3.23	3.23
Preceding Rain (in.).....	1	1
Station.....	3/29/37	3/29/37
Duration (hours).....	22 1/2	22 1/2
Temperature (max. & min.).....	64-77 43-39	64-77 43-39
Soil (major type).....	about 4.5%	about 4.5%
Percent of area.....	maximum	maximum
Slopes, average (percent).....	about 4.5%	about 4.5%
Cover, type.....	none	none
height (ft.).....	none	none
and last cultivated.....	3/8 5/10/36	3/8 5/10/36
soil loss (ton per acre).....	not measured	not measured
Remarks.....	not measured	not measured
Annual Soil Loss Ton/acre.....	not measured	not measured
• Terrace 1, 2, 3 & 4B (17.53 A.)		
• Plots 1-13 Field 2 (11.233 A.)		

Plot 13	Plot 13	Plot 13
Area (acres).....	3.23	3.23
Preceding Rain (in.).....	1	1
Station.....	3/29/37	3/29/37
Duration (hours).....	22 1/2	22 1/2
Temperature (max. & min.).....	64-77 43-39	64-77 43-39
Soil (major type).....	about 4.5%	about 4.5%
Percent of area.....	maximum	maximum
Slopes, average (percent).....	about 4.5%	about 4.5%
Cover, type.....	none	none
height (ft.).....	none	none
and last cultivated.....	3/8 5/10/36	3/8 5/10/36
soil loss (ton per acre).....	not measured	not measured
Remarks.....	not measured	not measured
Annual Soil Loss Ton/acre.....	not measured	not measured
• Terrace 1, 2, 3 & 4B (17.53 A.)		
• Plots 1-13 Field 2 (11.233 A.)		

Plot 13	Plot 13	Plot 13
Area (acres).....	3.23	3.23
Preceding Rain (in.).....	1	1
Station.....	3/29/37	3/29/37
Duration (hours).....	22 1/2	22 1/2
Temperature (max. & min.).....	64-77 43-39	64-77 43-39
Soil (major type).....	about 4.5%	about 4.5%
Percent of area.....	maximum	maximum
Slopes, average (percent).....	about 4.5%	about 4.5%
Cover, type.....	none	none
height (ft.).....	none	none
and last cultivated.....	3/8 5/10/36	3/8 5/10/36
soil loss (ton per acre).....	not measured	not measured
Remarks.....	not measured	not measured
Annual Soil Loss Ton/acre.....	not measured	not measured
• Terrace 1, 2, 3 & 4B (17.53 A.)		
• Plots 1-13 Field 2 (11.233 A.)		

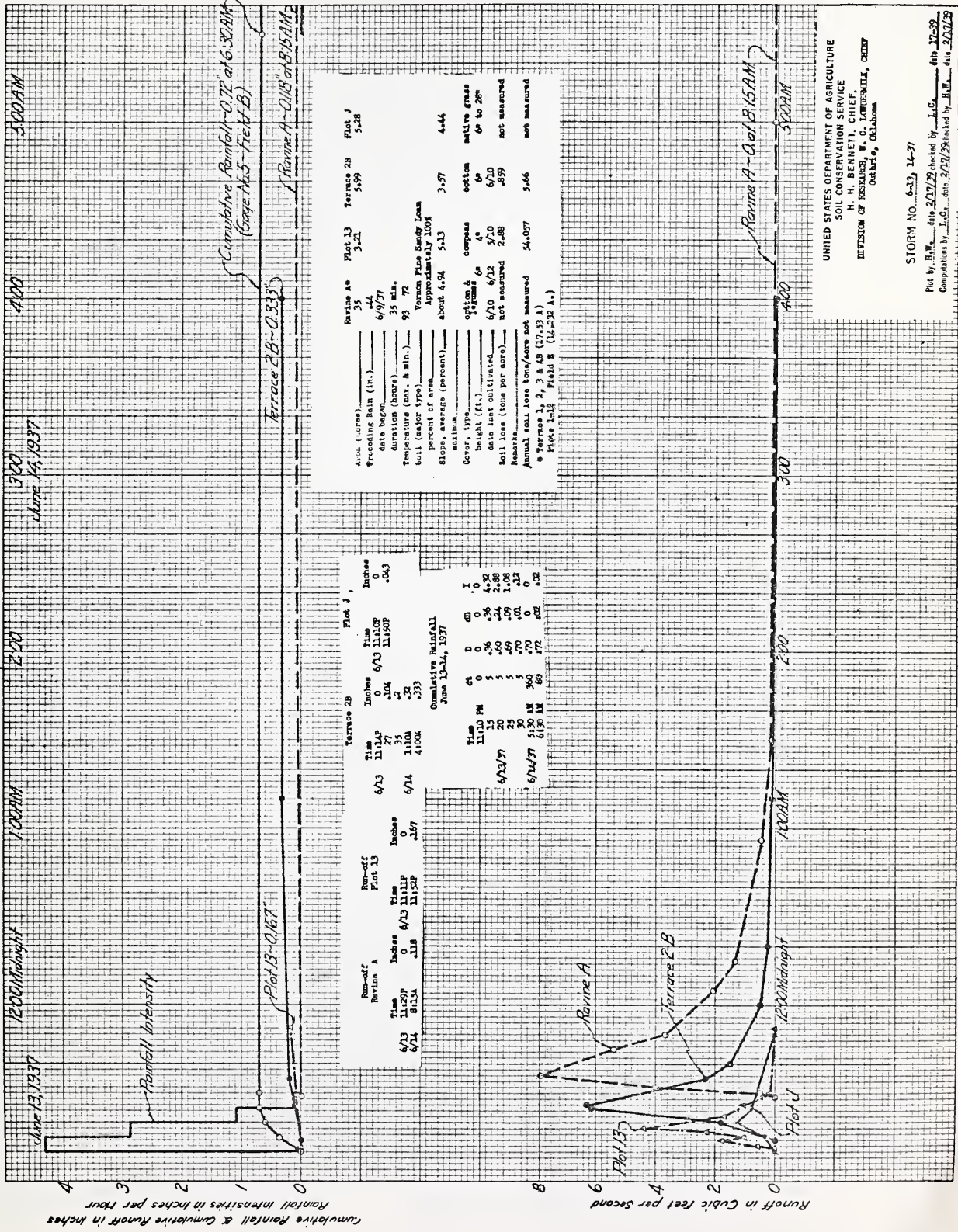
Plot 13	Plot 13	Plot 13
Area (acres).....	3.23	3.23
Preceding Rain (in.).....	1	1
Station.....	3/29/37	3/29/37
Duration (hours).....	22 1/2	22 1/2
Temperature (max. & min.).....	64-77 43-39	64-77 43-39
Soil (major type).....	about 4.5%	about 4.5%
Percent of area.....	maximum	maximum
Slopes, average (percent).....	about 4.5%	about 4.5%
Cover, type.....	none	none
height (ft.).....	none	none
and last cultivated.....	3/8 5/10/36	3/8 5/10/36
soil loss (ton per acre).....	not measured	not measured
Remarks.....	not measured	not measured
Annual Soil Loss Ton/acre.....	not measured	not measured
• Terrace 1, 2, 3 & 4B (17.53 A.)		
• Plots 1-13 Field 2 (11.233 A.)		

Plot 13	Plot 13	Plot 13
Area (acres).....	3.23	3.23
Preceding Rain (in.).....	1	1
Station.....	3/29/37	3/29/37
Duration (hours).....	22 1/2	22 1/2
Temperature (max. & min.).....	64-77 43-39	64-77 43-39
Soil (major type).....	about 4.5%	about 4.5%
Percent of area.....	maximum	maximum
Slopes, average (percent).....	about 4.5%	about 4.5%
Cover, type.....	none	none
height (ft.).....	none	none
and last cultivated.....	3/8 5/10/36	3/8 5/10/36
soil loss (ton per acre).....	not measured	not measured
Remarks.....	not measured	not measured
Annual Soil Loss Ton/acre.....	not measured	not measured
• Terrace 1, 2, 3 & 4B (17.53 A.)		
• Plots 1-13 Field 2 (11.233 A.)		

Plot 13	Plot 13	Plot 13
Area (acres).....	3.23	3.23
Preceding Rain (in.).....	1	1
Station.....	3/29/37	3/29/37
Duration (hours).....	22 1/2	22 1/2
Temperature (max. & min.).....	64-77 43-39	64-77 43-39
Soil (major type).....	about 4.5%	about 4.5%
Percent of area.....	maximum	maximum
Slopes, average (percent).....	about 4.5%	about 4.5%
Cover, type.....	none	none
height (ft.).....	none	none
and last cultivated.....	3/8 5/10/36	3/8 5/10/36
soil loss (ton per acre).....	not measured	not measured
Remarks.....	not measured	not measured
Annual Soil Loss Ton/acre.....	not measured	not measured
• Terrace 1, 2, 3 & 4B (17.53 A.)		
• Plots 1-13 Field 2 (11.233 A.)		

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
H. H. BENNETT, CHIEF
DIVISION OF RESEARCH, W. C. LONGWELL, CHIEF
Olathe, Kansas

STORM NO. 4-3-4-37
Plot by H.H. date 2/16/37 checked by J.G. date 2/20/37
Compilation by L.C. date 2/26/37 checked by H.H. date 2/26/37

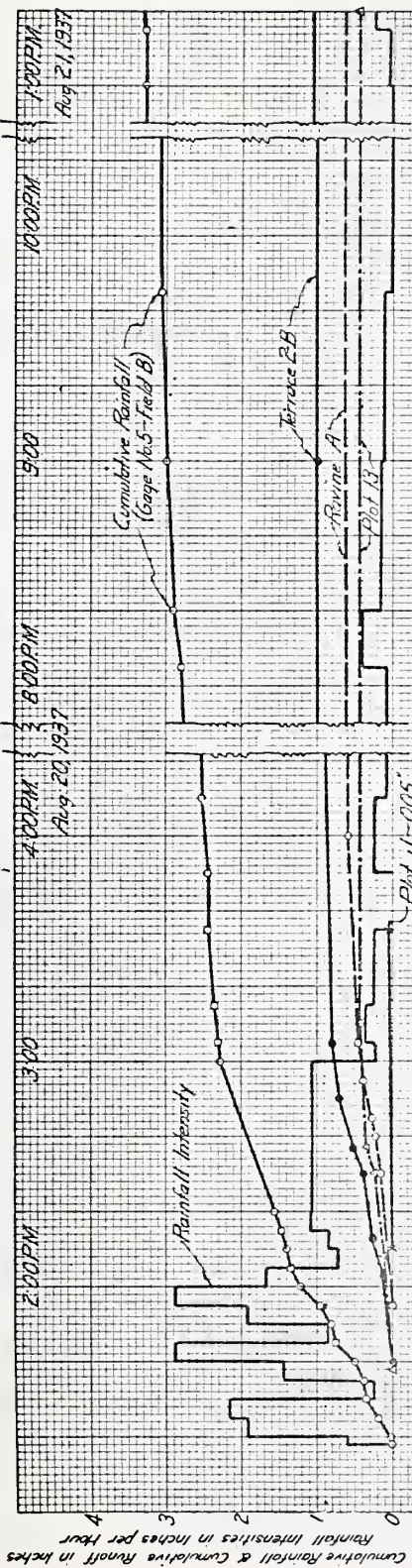


Atmos. (winds)	Barline A	Plot 13	Terrace 2B	Plot J
Preceding Rain (in.)	35	3.21	5.99	5.28
date begun	6/9/37			
duration (hours)	35 min.			
Temperature (max. & min.)	93 72			
soil (major type)	Verona Fine Sandy Loam			
percent of area	approximately 10%			
slope, average (percent)	about 4.5%	5.13	3.97	4.44
cover, type	oak	oak	oak	oak
height (ft.)	6 to 20	6 to 20	6 to 20	6 to 20
data last cultivated	6/10 6/12	6/10 6/12	6/10 6/12	6/10 6/12
soil loss (tons per acre)	not measured	not measured	not measured	not measured
Remarks	Runoff from 5:00 AM not measured	Runoff from 5:00 AM not measured	Runoff from 5:00 AM not measured	Runoff from 5:00 AM not measured
Runoff from 5:00 AM not measured	Runoff from 5:00 AM not measured	Runoff from 5:00 AM not measured	Runoff from 5:00 AM not measured	Runoff from 5:00 AM not measured
Runoff from 5:00 AM not measured	Runoff from 5:00 AM not measured	Runoff from 5:00 AM not measured	Runoff from 5:00 AM not measured	Runoff from 5:00 AM not measured

Time	Inches	Time	Inches
6/13 11:30 PM	0.04	6/13 11:30 PM	0.04
6/14 11:00 AM	0.32	6/14 11:00 AM	0.32
6/14 4:00 PM	0.33	6/14 4:00 PM	0.33
Cumulative Rainfall		Cumulative Rainfall	
June 13-14, 1937		June 13-14, 1937	
Time	in	Time	in
11:30 PM	0.04	11:30 PM	0.04
6/13 11:30 PM	0.04	6/13 11:30 PM	0.04
6/14 11:00 AM	0.32	6/14 11:00 AM	0.32
6/14 4:00 PM	0.33	6/14 4:00 PM	0.33

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
H. H. BENNETT, CHIEF
DIVISION OF EROSION CONTROL
Olathe, Oklahoma

STORM NO. 6-33, 14-37
Plot by H.H. date 2/17/38 checked by L.C. date 3/1/39
Computation by L.C. date 2/17/38 checked by H.H. date 2/17/39
Olathe, Okla.



Plot J-005

Run-off Terrace 2-B			Run-off Ravine A			Run-off Plot 13			Run-off Plot J		
Time	Inches		Time	Inches		Time	Inches		Time	Inches	
1:40 PM	0		1:55 PM	0		1:35 PM	0		2:10 PM	0	
2:00	1.25		2:15	1.25		2:10	1.25		2:10	1.25	
2:10	1.25		2:30	1.25		2:30	1.25		2:30	1.25	
2:30	1.25		2:45	1.25		2:45	1.25		2:45	1.25	
2:45	1.25		3:00	1.25		3:00	1.25		3:00	1.25	
3:00	1.25		3:15	1.25		3:15	1.25		3:15	1.25	
3:15	1.25		3:30	1.25		3:30	1.25		3:30	1.25	
3:30	1.25		3:45	1.25		3:45	1.25		3:45	1.25	
3:45	1.25		4:00	1.25		4:00	1.25		4:00	1.25	
4:00	1.25		4:15	1.25		4:15	1.25		4:15	1.25	
4:15	1.25		4:30	1.25		4:30	1.25		4:30	1.25	
4:30	1.25		4:45	1.25		4:45	1.25		4:45	1.25	
4:45	1.25		5:00	1.25		5:00	1.25		5:00	1.25	
5:00	1.25		5:15	1.25		5:15	1.25		5:15	1.25	
5:15	1.25		5:30	1.25		5:30	1.25		5:30	1.25	
5:30	1.25		5:45	1.25		5:45	1.25		5:45	1.25	
5:45	1.25		6:00	1.25		6:00	1.25		6:00	1.25	
6:00	1.25		6:15	1.25		6:15	1.25		6:15	1.25	
6:15	1.25		6:30	1.25		6:30	1.25		6:30	1.25	
6:30	1.25		6:45	1.25		6:45	1.25		6:45	1.25	
6:45	1.25		7:00	1.25		7:00	1.25		7:00	1.25	
7:00	1.25		7:15	1.25		7:15	1.25		7:15	1.25	
7:15	1.25		7:30	1.25		7:30	1.25		7:30	1.25	
7:30	1.25		7:45	1.25		7:45	1.25		7:45	1.25	
7:45	1.25		8:00	1.25		8:00	1.25		8:00	1.25	
8:00	1.25		8:15	1.25		8:15	1.25		8:15	1.25	
8:15	1.25		8:30	1.25		8:30	1.25		8:30	1.25	
8:30	1.25		8:45	1.25		8:45	1.25		8:45	1.25	
8:45	1.25		9:00	1.25		9:00	1.25		9:00	1.25	
9:00	1.25		9:15	1.25		9:15	1.25		9:15	1.25	
9:15	1.25		9:30	1.25		9:30	1.25		9:30	1.25	
9:30	1.25		9:45	1.25		9:45	1.25		9:45	1.25	
9:45	1.25		10:00	1.25		10:00	1.25		10:00	1.25	
10:00	1.25										

Ravine A

Terrace 2-B

Ravine A

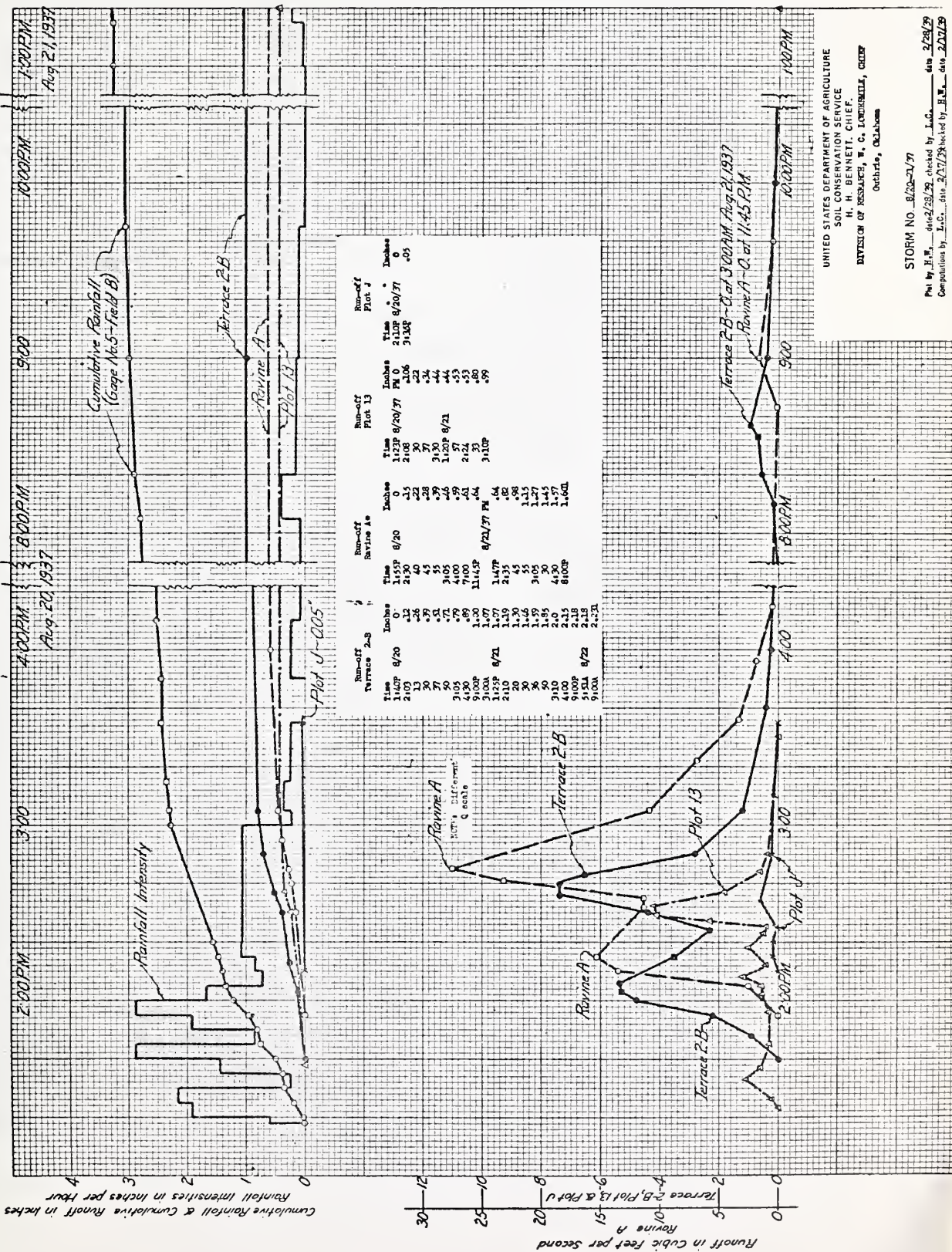
Terrace 2-B

Plot 13

Plot J

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
H. H. BENNETT, CHIEF
DIVISION OF RESEARCH, W. C. LUTHERVILLE, CHIEF
Olathe, Oklahoma

STORM NO. 8/20-21/37
Plotted by H.H.B. dated 2/28/39 checked by L.C. dated 2/28/39
Compilation by L.C. dated 2/27/39 checked by H.H.B. dated 2/27/39
Olathe, Okla.



UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
H. H. BENNETT, CHIEF
DIVISION OF RESEARCH, W. C. LOMBERG, CHIEF
Ochlocknee, Alabama

STORM NO. 8/22-2/77
Plot by H.H. 8/22/38, checked by L.C. 2/28/39
Compilation by L.C. 2/27/39, checked by H.H. 2/27/39
Ochlocknee, Ala.

Terrace 2-B-223 of 9:00AM, Aug 22, 1937

Ravine A-160 of 8:00PM

Plot 13-0.99

Rainfall Intensity

Ravine A

Area Different

0 scale

Cumulative Rainfall
August 20-21, 1937

(inches)

Time

8/20

8/21

8/22

8/23

8/24

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8/30

8/31

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Cumulative Rainfall
August 20-21, 1937

(inches)

Time

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Plot J

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MONTH January-December, 1938

SHEET 3 OF 16 SHEETS

RECORD OF SINGLE STORMS AND THEIR RUN-OFFS ON VARIOUS WATERSHEDS

PROJECT Guthrie, Oklahoma

U. S. DEPARTMENT OF AGRICULTURE

BUREAU OF PLANT INDUSTRY

No. 1733

Date	WATERED		RAINFALL					TEMPERATURE (degrees F.)			RUM-OFF			RAINFALL METERS (inches)		Silt Loss (tons per acre)	Comments or Remarks
	Number	Area (acres)	Gap No.	Buses (hours)	Duration (minutes)	Amount (inches)	Maximum Intensity			Run-off (inches)	Amount (inches)	Run-off (inches)	Time	Run-off (inches)			
							8 minutes (inches per hour)	15 minutes (inches per hour)	30 minutes (inches per hour)								
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
1938																	
3/8	#5	1.6 above	4	6:55P	100	0.05	1.92	0.92	0.89	80	7:43P	1:20A	0.03	1.55	10:40P	0.63	No. 7 continued Plowed with moldboard 6" deep 1/11-15
"	#6	"	5	7:43P	150	0.05	2.04	1.04	0.92	"	trace of run-off						
"	#7	"	5	7:43P	150	0.05	1.08	0.92	0.88	"	trace of run-off						
"	#8	"	9	7:03P	95	0.07	1.08	0.80	0.72	"	no run-off						
"	#9	"	8	7:00P	95	0.07	1.92	0.92	0.88	"	no run-off						
"	#10	"	8	6:55P	100	0.05	1.92	0.92	0.88	"	6:58P 10:03A	0.26		0.82	10:27A	0.40	Harrowed 4/15 Disked about 3" deep 5/10-12 Derso planted 5/12 Cultivated 5/30-6/1, 6/16, 6/23 Derso cut and shocked 9/19-20 Derso samples threshed 10/18
"	#11	"	12	7:03P	97	0.06	1.80	0.96	0.96	"	trace of run-off			0.99	10:20P	0.43	
3/18	#1	"	5	6:10P	255	0.66	1.92	0.92	0.89	40	7:43P	1:20A	0.03	1.55	10:40P	0.63	No. 8 terrace 3-C Soil - vernon fine sandy loam Average land slope 4-3% Grade 6" per 100 ft. Vertical spacing 3-51 ft. Field bare 1/1 Plowed with moldboard 7" deep and harrowed 3/21 Cultivated to prevent blowing 4/6
"	#2	"	3	"	215	0.60	2.04	1.04	0.92	"	trace of run-off						
"	#3	"	7	"	255	0.58	1.08	0.80	0.72	"	no run-off						
"	#4	"	7	"	240	0.60	1.08	0.92	0.88	"	no run-off						
"	#5	"	4	"	240	0.60	1.08	0.92	0.88	"	no run-off						
"	#6	"	5	"	255	0.66	1.92	0.92	0.88	"	6:58P 10:03A	0.26		0.82	10:27A	0.40	
"	#7	"	5	"	255	0.66	1.92	0.92	0.88	"	6:58P 10:03A	0.26		0.82	10:27A	0.40	
"	#8	"	9	"	245	0.71	1.80	1.00	0.96	"	trace of run-off						
"	#9	"	8	"	215	0.69	1.68	1.00	0.92	"	no run-off						
"	#10	"	4	"	240	0.60	1.08	0.92	0.88	"	no run-off						
"	#11	"	12	"	255	0.43	1.56	0.84	0.48	"	no run-off						
3/26-28	#1	"	5	7:55A	3222	4.08	0.79	0.60	0.53	46-59	10-17	12:30P 3:15P	0.84	11.07	8:12A	3.24	Disked and harrowed 5/2 Cotton planted 5/6 Disked and harrowed 5/26-27 Cotton replanted 5/27 Cultivated 6/17, 7/2, 7/12 Cotton picked 9/20-22, 10/12 Wheat cover drilled 10/11-15
"	#2	"	3	8:05A	3170	4.23	1.20	0.80	0.70	"	11:02A 11:30P	2.72		2.01	8:12P	1.51	No. 9 terrace 5-C Soil - vernon fine sandy loam Average land slope 4-7% Grade 2" per 100 ft. Vertical spacing 3-43 ft. Field operations same as for terrace 3-C
"	#3	"	4	7:40A	3165	4.02	0.36	0.36	0.34	"	10:10A 11:00P	1.56		1.07	8:10P	2.06	
"	#4	"	7	7:55A	3215	4.14	0.84	0.76	0.58	"	7:00AM 7:30P	0.03		0.06	9:30A	4.11	
"	#5	"	4	7:40A	3165	4.02	0.36	0.36	0.34	"	3:05AM 7:40A	0.03		0.299	8:23A	3.99	
"	#6	"	5	7:55A	3222	4.08	0.79	0.60	0.53	"	11:11AM 12:10PM	2.96		3.17	8:25A	1.12	
"	#7	"	5	7:55A	3232	4.08	0.79	0.60	0.53	"	11:11AM 8:00A	2.64		2.99	8:22A	1.44	
"	#8	"	9	7:40A	3165	3.99	0.72	0.56	0.48	"	11:45AM 6:08PM	1.69		1.57	8:20P	2.36	
"	#9	"	* 8	7:30A	3170	4.01	1.08	0.64	0.54	"	12:10AM 7:30AM	1.09		0.92	8:25A	2.92	
"	#10	"	12	7:40A	3165	4.02	0.36	0.36	0.34	"	11:05A 11:00P	3.02		0.56	8:17P	1.00	
"	#11	"	12	7:55A	3155	4.04	0.96	0.80	0.60	"	no run-off						
4/1	#1	"	5	11:30A	Snow	trace	trace			44	25						
"	#2	"	3	"	"	trace	trace			"	"						
"	#3	"	4	"	"	0.02				"	"						
"	#4	"	7	"	"	trace				"	"						
"	#5	"	4	"	"	trace				"	"						
"	#6	"	5	"	"	trace				"	"						
"	#7	"	5	"	"	trace				"	"						
"	#8	"	9	"	"	trace				"	"						
"	#9	"	8	"	"	0.01				"	"						
"	#10	"	4	"	"	trace				"	"						
"	#11	"	12	"	"	trace				"	"						
"																	

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
DIVISION OF RESEARCH

MONTH January - December, 1938

SHEET 4 OF 16 SHEETS

PROJECT Outhrie, Oklahoma
RECORD OF SINGLE STORMS AND THEIR RUN-OFFS ON VARIOUS WATERSHEDS

DATE	WATERSHED			RUNOFF						TEMPERATURE (degrees F.)			RUN-OFF			RUNOFF MEAN (inches)	Silt Loss (tons per acre)	COMMENTS ON WATERSHED	
	Number	Area (acres)	Gage No.	Begin (hour)	Duration (minutes)	Amount (inches)	MAXIMUM EXCESS			Minimum	Maximum	Excess (hour)	Soiled (hour)	Amount (inches)	MAXIMUM RATE				
							8 minutes (inches per hour)	15 minutes (inches per hour)	30 minutes (inches per hour)						On ft. sec.				Time
1938	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	
4/7-8	# 1	As Above	5	7:30A	SNOW	0.17				35-36	25-30							Grade - Level (No. 10 cont.)	
"	# 2	"	3	1:30A	"	0.25				"	"							Plowed with moldboard about 6" deep 4/18-19	
"	# 3	"	4	1:30A	"	0.26				"	"							Disked and harrowed 5/9	
"	# 4	"	7	7:30A	"	0.81				"	"							Cotton planted 5/9	
"	# 5	"	4	1:30A	"	0.26				"	"							Cultivated 5/31, 6/15, 7/1, 7/13	
"	# 6	"	5	7:30A	"	0.17				"	"							Cotton picked 9/7, 10/13	
"	# 7	"	5	7:30A	"	0.17				"	"							Wheat cover drilled 10/14	
"	# 8	"	9	1:30A	"	0.17				"	"							No. 11 Pasture Plot	
"	# 9	"	8	7:30A	"	0.14				"	"							Soil - Vernon fine sandy loam - Virgin condition	
"	# 10	"	4	1:30A	"	0.26				"	"							Average land slope 5.65%	
"	# 11	"	12	7:30A	"	0.16				"	"							Cover Native grass well sodded	
4/14	# 1	"	"	8:20P	15	0.02				70	55								
"	# 2	"	"	"	20	0.03				"	"								
"	# 3	"	"	"	15	0.02				"	"								
"	# 4	"	"	"	25	0.05				"	"								
"	# 5	"	"	"	15	0.02				"	"								
"	# 6	"	"	"	15	0.02				"	"								
"	# 7	"	"	"	15	0.02				"	"								
"	# 8	"	"	"	15	0.03				"	"								
"	# 9	"	"	"	25	0.04				"	"								
"	# 10	"	"	"	15	0.02				"	"								
"	# 11	"	"	"	15	0.04				"	"								
4/20	# 1	"	"	2:00A	345	0.30		0.36	0.24	0.18	69	48							
"	# 2	"	"	"	310	0.30		0.60	0.24	0.24	"	"							
"	# 3	"	"	"	330	0.27		0.36	0.16	0.10	"	"							
"	# 4	"	"	"	390	0.30					"	"							
"	# 5	"	"	"	330	0.27		0.36	0.16	0.10	"	"							
"	# 6	"	"	"	345	0.30		0.36	0.24	0.18	"	"							
"	# 7	"	"	"	345	0.30		0.36	0.24	0.18	"	"							
"	# 8	"	"	"	345	0.33		0.18	0.22	0.18	"	"							
"	# 9	"	"	"	330	0.31		0.18	0.28	0.16	"	"							
"	# 10	"	"	"	330	0.27		0.36	0.16	0.10	"	"							
"	# 11	"	"	"	320	0.28		0.24	0.12	0.08	"	"							
4/21	# 1	"	"	8:00A	250	0.55		0.36	0.24	0.16	65	40							
"	# 2	"	"	7:45A	253	0.58		0.36	0.28	0.18	"	"							
"	# 3	"	"	7:45A	255	0.57		0.36	0.28	0.18	"	"							
"	# 4	"	"	7:45A	245	0.99		0.36	0.28	0.18	"	"							
"	# 5	"	"	7:45A	255	0.57		0.36	0.28	0.18	"	"							
"	# 6	"	"	8:00A	250	0.55		0.36	0.24	0.16	"	"							
"	# 7	"	"	8:00A	250	0.55		0.36	0.24	0.16	"	"							
"	# 8	"	"	7:45A	240	0.57		0.36	0.24	0.20	"	"							

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
DIVISION OF RESEARCH

MONTH January - December, 1938
SHEET 5 OF 16 SHEETS

RECORD OF SINGLE STORMS AND THEIR RUN-OFFS ON VARIOUS WATERSHEDS

Project Guthrie, Oklahoma

Date	WATERSHED		RAINFALL										TEMPERATURE (degrees F.)		RUN-OFF				Run-off Mono (inches)	Run-off (cfs per sec)	COUNTRIES OF WATERSHED
	Number	Area (acres)	Oggs No.	Basin (hours)	Duration (minutes)	Amount (inches)	MAXIMUM INTENSITY				Minimum	Maximum	Began (hour)	Ended (hour)	Amount (inches)	MEASURED RATE					
							8 minutes (inches per hour)	15 minutes (inches per hour)	30 minutes (inches per hour)	Cfs ft. sec.						Time					
																	(4)	(9)			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)			
1938																					
1/21	# 9	As Above	8	7115A	260	0.55	0.36	0.24	0.20	65	110										
"	# 10	"	4	7115A	255	0.57	0.36	0.16	0.16	"	"										
"	# 11	"	12	7115A	210	0.52	0.24	0.24	0.14	"	"										
1/21	# 1	"	5	3115P	115	0.35	1.56	0.84	0.64	82	58										
"	# 2	"	3	"	140	0.21	0.72	0.56	0.36	"	"										
"	# 3	"	4	"	140	0.18	0.72	0.48	0.30	"	"										
"	# 4	"	7	"	35	0.10				"	"										
"	# 5	"	11	"	15	0.18	0.72	0.48	0.30	"	"										
"	# 6	"	5	"	15	0.35	1.56	0.84	0.64	"	"										
"	# 7	"	5	"	15	0.35	1.56	0.84	0.64	"	"										
"	# 8	"	9	"	15	0.37	0.56	0.64	0.56	"	"										
"	# 9	"	8	"	15	0.37	1.44	0.92	0.64	"	"										
"	# 10	"	4	"	10	0.18	0.72	0.48	0.30	"	"										
"	# 11	"	12	"	35	0.39	1.32	0.76	0.64	"	"										
1/26-27	# 1	"	5	2100P	315P	0.12	0.24	0.16	0.12	72-79	58-18										
"	# 2	"	3	"	260	0.16	0.24	0.16	0.12	"	"										
"	# 3	"	4	"	265	0.12	0.24	0.16	0.10	"	"										
"	# 4	"	7	2110P	351	0.14				"	"										
"	# 5	"	4	2100P	265	0.12	0.24	0.16	0.10	"	"										
"	# 6	"	5	"	315	0.12	0.24	0.16	0.12	"	"										
"	# 7	"	5	"	315	0.12	0.24	0.16	0.12	"	"										
"	# 8	"	9	"	260	0.12	0.24	0.16	0.12	"	"										
"	# 9	"	8	"	265	0.14	0.24	0.20	0.12	"	"										
"	# 10	"	4	"	265	0.12	0.24	0.16	0.10	"	"										
"	# 11	"	12	"	255	0.18	0.24	0.20	0.12	"	"										
5/3-4	# 1	"	5	1100P	590	0.84	1.32	0.56	0.44	78-68	57-41										
"	# 2	"	3	"	210	0.84	1.80	0.68	0.46	"	"										
"	# 3	"	4	1105P	585	0.86	1.44	0.56	0.40	"	"										
"	# 4	"	7	1100P	595	0.94	1.92	0.76	0.50	"	"										
"	# 5	"	4	1105P	585	0.86	1.44	0.56	0.40	"	"										
"	# 6	"	5	1100P	590	0.84	1.32	0.56	0.44	"	"										
"	# 7	"	5	"	590	0.84	1.32	0.56	0.44	"	"										
"	# 8	"	9	"	590	0.86	1.20	0.64	0.44	"	"										
"	# 9	"	8	"	595	0.92	1.68	0.76	0.48	"	"										
"	# 10	"	4	1105P	585	0.86	1.44	0.56	0.40	"	"										
"	# 11	"	12	1100P	585	0.96	1.92	0.72	0.50	"	"										
5/5	# 1	"	5	8150P	15	0.03				73	53										
"	# 2	"	3	"	10	0.02				"	"										
"	# 3	"	4	"	10	0.03				"	"										
"	# 4	"	7	"		0.03				"	"										

1/ 2 above

Guthrie, Oklahoma
printing office 9-17568

RECORD OF SINGLE STORMS AND THEIR RUN-OFFS ON VARIOUS WATERSHEDS

MONTH January - December, 1938
SHEET 6 OF 7

[illegible]

UNITED STATES DEPARTMENT OF AGRICULTURE
 SOIL CONSERVATION SERVICE
 DIVISION OF RESEARCH

 MONTH January-December, 1938

 SHEET 7 OF 16 SHEETS

 PROJECT Guthrie, Oklahoma
 RECORD OF SINGLE STORMS AND THEIR RUN-OFFS ON VARIOUS WATERSHEDS

Date	Watershed		Rainfall				Temperature (degrees F.)		Run-off				Rainfall Minus Run-off (inches)	Run Loss (tons per acre)	Condition of Watershed				
	Number	Area (acres)	Gage No.	Begin (hour)	Duration (minutes)	Amount (inches)	Maximum Intensity (inches per hour)		Hours (hour)	Excess (hour)	Amount (inches)	Maximum Rate							
							5 minutes (inches per hour)	15 minutes (inches per hour)				Cu. ft. sec.	Time						
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	
1938	5/19	#1	as above	5	4:05A	110	0.50	1.68	1.20	0.74	82	77	4:34A	2:15P	0.13	8.79	4:16A	0.37	
	"	#2	"	3	4:05A	110	0.51	1.74	1.21	0.76	"	"	4:22A	2:00P	0.12	1.50	4:28A	0.39	2.064
	"	#3	"	4	"	115	0.51	1.68	1.28	0.78	"	"	trace of run-off						
	"	#4	"	7	"	110	0.54	1.52	1.44	0.88	"	"	no run-off						
	"	#5	"	4	"	115	0.51	1.68	1.28	0.78	"	"	no run-off						
	"	#6	"	5	"	110	0.50	1.68	1.20	0.74	"	"	4:25A	9:55A	0.25	3.44	4:35A	0.25	0.52
	"	#7	"	5	"	110	0.50	1.68	1.20	0.74	"	"	4:22A	9:00A	0.24	3.44	4:34A	0.26	0.504
	"	#8	"	9	"	110	0.57	1.68	1.36	0.92	"	"	4:23A	9:55A	0.25	1.57	4:37A	0.32	0.363
	"	#9	"	8	"	115	0.55	2.16	1.88	0.92	"	"	4:24A	1:02P	0.24	0.58	4:48A	0.31	0.104
	"	#10	"	4	"	115	0.51	1.68	1.28	0.78	"	"	4:23A	11:28A	0.16	0.19	4:38A	0.35	0.100
	"	#11	"	12	"	110	0.48	1.68	1.40	0.80	"	"	no run-off						
5/21-23	#1	"	5	9:10P	205	2.05	3.60	2.68	1.54	69-82	49-62	9:38P	2:00A	1.22	35.53	5:18P	0.83		
"	#2	"	3	"	205	2.05	3.60	2.64	1.52	"	"	9:28P	8:00A	1.30	12.74	5:15P	0.75	30.115	
"	#3	"	7	"	2020	2.15	3.84	2.68	1.52	"	"	9:28P	8:00A	1.19	3.35	5:19P	0.96	0.116	
"	#4	"	4	"	2010	2.27	3.84	2.88	1.64	"	"	5:10P	10:20A	0.02	0.06	5:30P	2.25	0.003	
"	#5	"	4	"	2020	2.05	3.84	2.68	1.52	"	"	5:15P	8:10A	0.33	2.81	5:25P	1.72		
"	#6	"	5	"	2015	2.05	3.60	2.68	1.54	"	"	9:28P	7:00A	1.60	12.59	5:22P	0.45	3.417	
"	#7	"	5	"	2015	2.05	3.60	2.68	1.54	"	"	9:32P	8:25A	1.45	10.48	5:21P	0.60	4.218	
"	#8	"	9	"	2015	2.19	4.56	2.96	1.62	"	"	9:31P	1:08A	1.65	9.40	5:26P	0.51	4.424	
"	#9	"	8	"	2015	2.16	4.32	3.12	1.74	"	"	9:38P	2:00A	1.39	3.24	5:30P	0.87	1.061	
"	#10	"	4	"	2020	2.15	3.84	2.68	1.52	"	"	9:30P	12:25P	1.43	1.59	5:23P	0.72	1.208	
"	#11	"	12	9:05P	2020	2.29	3.96	2.84	1.56	"	"	no run-off							
6/6-7	#1	"	5	9:30P	240	0.36	0.36	0.20	0.18	92-79	65-63							1/ May 23, 1938	
"	#2	"	3	"	230	0.37	0.36	0.16	0.16	"	"							2/ May 22, 1938	
"	#3	"	4	"	225	0.36	0.36	0.20	0.18	"	"								
"	#4	"	7	"	225	0.37	0.36	0.20	0.18	"	"								
"	#5	"	4	"	225	0.36	0.36	0.20	0.18	"	"								
"	#6	"	5	"	210	0.36	0.36	0.20	0.18	"	"								
"	#7	"	5	"	210	0.36	0.36	0.20	0.18	"	"								
"	#8	"	9	"	240	0.36	0.24	0.16	0.16	"	"								
"	#9	"	8	"	230	0.36	0.24	0.16	0.16	"	"								
"	#10	"	4	"	225	0.36	0.36	0.20	0.18	"	"								
"	#11	"	12	"	235	0.36	0.24	0.16	0.16	"	"								
6/8-9	#1	"	5	9:25A	255	0.22	0.36	0.20	0.16	71-85	68-68								
"	#2	"	3	"	270	0.25	0.24	0.24	0.16	"	"								
"	#3	"	4	"	255	0.26	0.36	0.28	0.14	"	"								
"	#4	"	7	"	245	0.29	0.36	0.24	0.16	"	"								
"	#5	"	7	"	255	0.26	0.36	0.28	0.14	"	"								
"	#6	"	5	"	255	0.22	0.36	0.20	0.16	"	"								
"	#7	"	5	"	255	0.22	0.36	0.20	0.16	"	"								
"	#8	"	9	"	255	0.23	0.48	0.20	0.16	"	"								

UNITED STATES DEPARTMENT OF AGRICULTURE
 SOIL CONSERVATION SERVICE
 DIVISION OF RESEARCH
MONTH January - December, 1938SHEET 9 OF 16 SHEETS

RECORD OF SINGLE STORMS AND THEIR RUN-OFFS ON VARIOUS WATERSHEDS

PROJECT Oathrie, Oklahoma

S. A. SPRINGER, FIELD OFFICER

U. S. DEPARTMENT OF AGRICULTURE 8-1234																			
WATERSHED			RAINFALL					TEMPERATURE (degrees F.)		RUN-OFF				RAINFALL MINUS RUN-OFF (inches)		Run Loss (tons per acre)		CONDITION OF WATERSHED	
Date	Number	Area (acres)	Gage No.	Began (hour)	Position (miles)	Amount (inches)	MAXIMUM INTENSITY			Total (inches)	Minimum	Maximum	Rained (hour)	Amount (inches)	MAXIMUM RATE				
							5 minutes (inches per hour)	15 minutes (inches per hour)	30 minutes (inches per hour)						Cu. ft. sec.	Time			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	
1938	# 5	As Above	4	9:35A	265	0.55	1.56	0.94	0.52	82	70								
	# 6	"	5	9:10A	290	0.59	3.36	1.12	0.80	"	"								
	# 7	"	5	9:10A	290	0.59	3.36	1.12	0.80	"	"								
	# 8	"	9	9:35A	295	0.63	2.10	1.16	0.66	"	"								
	# 9	"	8	9:35A	275	0.53	1.20	0.36	0.48	"	"								
	# 10	"	4	9:35A	265	0.55	1.56	0.94	0.52	"	"								
	# 11	"	12	11:00A	180	0.48	2.04	1.04	0.52	"	"								
	6/25	# 1	"	5	4:30P	105	0.32	0.84	0.68	0.46	82	70							
	"	# 2	"	3	"	100	0.33	0.48	0.24	0.24	"	"							
	"	# 3	"	4	"	105	0.35	0.48	0.28	0.26	"	"							
	"	# 4	"	7	"	105	0.37	0.36	0.32	0.28	"	"							
"	# 5	"	4	"	105	0.35	0.48	0.28	0.26	"	"								
"	# 6	"	5	"	105	0.32	0.84	0.68	0.46	"	"								
"	# 7	"	5	"	105	0.32	0.84	0.68	0.46	"	"								
"	# 8	"	9	4:05P	135	0.37	0.48	0.28	0.28	"	"								
"	# 9	"	8	4:30P	110	0.35	0.48	0.24	0.24	"	"								
"	# 10	"	4	"	105	0.35	0.48	0.28	0.26	"	"								
"	# 11	"	12	"	120	0.36	0.60	0.33	0.26	"	"								
6/28	# 1	"	5	9:00P	20	0.04				89	70								
	# 2	"	3	9:00P	60	0.04				"	"								
	# 3	"	4	9:30P	20	0.04				"	"								
	# 4	"	7	9:00P	25	0.05				"	"								
	# 5	"	4	9:30P	20	0.04				"	"								
	# 6	"	5	9:00P	20	0.04				"	"								
	# 7	"	5	9:00P	20	0.04				"	"								
	# 8	"	9	9:00P	60	0.03				"	"								
	# 9	"	8	9:00P	45	0.04				"	"								
	# 10	"	4	9:30P	20	0.04				"	"								
	# 11	"	12	9:30P	25	0.04				"	"								
7/7	# 1	"	5	8:38P	210	0.90	2.40	1.44	1.20	97	65								
	# 2	"	3	8:45P	160	0.39	2.40	1.56	1.32	"	"								
	# 3	"	4	8:45P	180	1.02	2.64	1.80	1.44	"	"								
	# 4	"	7	8:45P	210	1.04	2.64	1.80	1.44	"	"								
	# 5	"	4	8:45P	180	1.02	2.64	1.80	1.44	"	"								
	# 6	"	5	8:38P	210	0.90	2.40	1.44	1.20	"	"								
	# 7	"	5	8:38P	210	0.90	2.40	1.44	1.20	"	"								
	# 8	"	9	8:38P	160	0.83	2.64	1.44	1.09	"	"								
	# 9	"	8	8:45P	210	0.88	2.40	1.44	1.16	"	"								
	# 10	"	4	8:45P	180	1.02	2.64	1.80	1.44	"	"								
	# 11	"	12	8:45P	210	0.83	2.88	1.36	1.00	"	"								



Project Guthrie, Oklahoma

SHEET 10 OF 16 SHEETS

RECORD OF SINGLE STORMS AND THEIR RUN-OFFS ON VARIOUS WATERSHEDS

Date	WATERSHED		RAINFALL					TEMPERATURE (Degrees F.)		RUN-OFF					RELATIVE HUMIDITY (inches)	WIND LOSS (tons per acre)	CONDITIONS OF WEATHERED		
	Number	Area (acres)	Open No.	Begin (hour)	Duration (minutes)	Amount (inches)	MAXIMUM INTENSITY			Maximum	Minimum	Begin (hour)	Ended (hour)	Amount (inches)				MAXIMUM RATE	
							8 minutes (inches per hour)	15 minutes (inches per hour)	30 minutes (inches per hour)									Cu. ft. sec.	Time
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)		
7/15	# 1	As Above	5	12:00N	55	0.15				89	71								
"	# 2	"	3	"	50	0.12				"	"								
"	# 3	"	4	"	45	0.12				"	"								
"	# 4	"	7	"	35	0.19				"	"								
"	# 5	"	4	"	15	0.12				"	"								
"	# 6	"	5	"	55	0.15				"	"								
"	# 7	"	5	"	55	0.15				"	"								
"	# 8	"	9	12:05P	35	0.10				"	"								
"	# 9	"	8	12:05P	35	0.15				"	"								
"	# 10	"	4	12:00N	45	0.12				"	"								
"	# 11	"	12	12:05P	40	0.29	1.44	0.80	0.40	"	"								
7/28	# 1	"	5	1:00A	600	1.28	1.68	1.08	0.80	82	65								
"	# 2	"	3	12:40A	560	1.31	1.44	1.08	0.92	"	"								
"	# 3	"	4	12:10A	530	1.19	1.20	1.00	0.90	"	"								
"	# 4	"	7	12:45A	515	1.22	1.44	1.12	0.88	"	"								
"	# 5	"	4	12:10A	530	1.19	1.20	1.00	0.80	"	"								
"	# 6	"	5	1:00A	600	1.28	1.68	1.08	0.80	"	"								
"	# 7	"	5	1:00A	600	1.28	1.68	1.08	0.80	"	"								
"	# 8	"	9	1:00A	570	1.26	1.44	1.02	0.96	"	"								
"	# 9	"	8	1:00A	510	1.29	1.61	1.24	1.00	"	"								
"	# 10	"	4	12:10A	530	1.19	1.20	1.00	0.80	"	"								
"	# 11	"	12	12:35A	565	1.19	1.68	1.04	0.80	"	"								
7/28	# 1	"	5	8:10P	85	1.15	3.24	2.32	1.80	82	65								
"	# 2	"	3	8:15P	75	1.58	3.12	2.52	2.08	"	"								
"	# 3	"	4	8:10P	85	1.48	3.60	2.20	1.70	"	"								
"	# 4	"	7	8:10P	80	1.53	3.24	2.12	1.78	"	"								
"	# 5	"	4	8:10P	85	1.18	3.12	2.20	1.70	"	"								
"	# 6	"	5	8:10P	85	1.15	3.24	2.32	1.80	"	"								
"	# 7	"	5	8:10P	85	1.45	3.24	2.32	1.80	"	"								
"	# 8	"	9	8:10P	75	1.37	2.88	1.44	1.48	"	"								
"	# 9	"	8	8:18P	85	1.40	3.12	2.04	1.60	"	"								
"	# 10	"	4	8:10P	85	1.48	3.12	2.20	1.70	"	"								
"	# 11	"	12	8:15P	85	1.48	2.88	1.76	1.51	"	"								
8/15=16	# 1	"	5	4:40P	510	1.38	2.40	1.60	1.20	93=93	68=68								
"	# 2	"	3	4:40P	500	1.46	2.40	1.64	1.16	"	"								
"	# 3	"	4	4:415P	510	1.37	2.40	1.64	1.12	"	"								
"	# 4	"	7	4:415P	510	1.47	3.00	1.84	1.20	"	"								
"	# 5	"	4	4:415P	510	1.37	2.40	1.64	1.12	"	"								
"	# 6	"	5	4:40P	510	1.38	2.40	1.60	1.20	"	"								
"	# 7	"	5	4:40P	510	1.38	2.40	1.60	1.20	"	"								
"	# 8	"	9	4:40P	510	1.47	2.88	1.76	1.16	"	"								

UNITED STATES DEPARTMENT OF AGRICULTURE
 SOIL CONSERVATION SERVICE
 DIVISION OF RESEARCH

 MONTH January - December, 1938

 SHEET 11 OF 16 SHEETS

RECORD OF SINGLE STORMS AND THEIR RUN-OFFS ON VARIOUS WATERSHEDS

 PROJECT Outhello, Oklahoma

S. A. MORGENTHAU, DISTRICT ENGINEER

DATE	WATERSHED		RUNOFF				TEMPERATURE (degrees F)				RUN-OFF				RAINFALL MINUS RUNOFF (inches)	BIG LOSS (tons per acre)	COORDINATE OF WATERSHED		
	Number	Area (acres)	Gage No.	Begin (hour)	Duration (minutes)	Amount (inches)	MAXIMUM INTENSITY			Minimum	Maximum	Began (hour)	Ended (hour)	Amount (inches)				MAXIMUM RATE	
							4 minutes (inches per hour)	15 minutes (inches per hour)	30 minutes (inches per hour)									Cu. ft. sec.	Time
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	
1938	# 9	As Above	8	4:40P	515	1.18	3.24	1.92	1.32	93-93	68-69	4:58P	4:00A	0.25	0.54	12:11A	1.23		
	# 10	"	4	4:45P	510	1.37	2.40	1.64	1.12	"	"	4:55P	6:00A	0.38	0.39	12:38A	0.99		
	# 11	"	12	4:40P	510	1.45	2.76	1.84	1.08	"	"	No Run-off							
9/1	# 1	"	5	1:30P	70	0.09				99	64								
"	# 2	"	3	1:30P	60	0.08				"	"								
"	# 3	"	4	1:30P	60	0.08				"	"								
"	# 4	"	7	1:45P	60	0.09				"	"								
"	# 5	"	4	1:30P	60	0.08				"	"								
"	# 6	"	5	1:30P	70	0.09				"	"								
"	# 7	"	5	1:30P	70	0.09				"	"								
"	# 8	"	9	1:30P	70	0.10				"	"								
"	# 9	"	8	1:30P	80	0.09				"	"								
"	# 10	"	4	1:30P	60	0.08				"	"								
"	# 11	"	12	1:30P	60	0.07				"	"								
9/2	# 1	"	5	6:20P	160	1.07	2.10	2.12	1.78	95	68	6:14P	9:54P	0.177	11.07	7:04P	0.90		
"	# 2	"	3	"	170	1.13	2.10	2.20	1.82	"	"	6:34P	12:11A	0.367	2.65	6:14P	0.77		
"	# 3	"	4	"	175	1.16	2.76	2.08	2.00	"	"	Trace of Run-off							
"	# 4	"	7	"	165	1.20	2.28	2.10	1.88	"	"	Trace of Run-off							
"	# 5	"	4	"	175	1.16	2.76	2.10	1.78	"	"	Trace of Run-off							
"	# 6	"	5	"	160	1.07	2.10	2.12	1.78	"	"	6:10P	1:00A	0.322	3.62	6:50P	0.75		
"	# 7	"	5	"	160	1.07	2.10	2.12	1.78	"	"	6:33P	11:28P	0.33	3.62	6:18P	0.74		
"	# 8	"	9	"	155	1.02	2.16	1.60	1.54	"	"	6:36P	9:21P	0.23	1.64	6:54P	0.79		
"	# 9	"	8	"	100	1.09	2.10	1.88	1.80	"	"	Instrument failure							
"	# 10	"	4	"	175	1.16	2.76	2.10	1.88	"	"	6:29P	12:00A	0.41	0.19	7:03P	0.75		
"	# 11	"	12	"	165	1.28	2.88	2.12	1.94	"	"	No Run-off							
9/4	# 1	"	5	2:50P	150	0.40	2.10	1.32	0.68	91	73	3:07P	6:02P	0.135	6.12	3:27P	0.27		
"	# 2	"	3	2:50P	155	0.51	3.36	1.76	0.92	"	"	3:04P	6:52P	0.22	6.56	3:07P	0.29		
"	# 3	"	4	2:50P	160	0.45	2.10	1.44	0.76	"	"	Trace of Run-off							
"	# 4	"	7	2:50P	145	0.32	1.92	1.00	0.52	"	"	No Run-off							
"	# 5	"	4	"	160	0.15	2.10	1.14	0.76	"	"	Trace of Run-off							
"	# 6	"	5	"	150	0.40	2.10	1.32	0.68	"	"	3:02P	8:10P	0.17	2.90	3:11P	0.23		
"	# 7	"	5	"	150	0.40	2.10	1.32	0.68	"	"	3:01P	7:50P	0.06	3.81	3:08P	0.34		
"	# 8	"	9	"	150	0.38	1.68	1.16	0.60	"	"	2:58P	4:53P	0.08	0.77	3:10P	0.30		
"	# 9	"	8	"	145	0.32	1.92	1.12	0.52	"	"	3:10P	8:20P	0.09	0.11	3:30P	0.24		
"	# 10	"	4	"	160	0.45	2.10	1.14	0.76	"	"	2:54P	8:00P	0.22	0.35	3:10P	0.23		
"	# 11	"	12	"	165	0.25	1.80	0.72	0.40	"	"	No Run-off							
9/12	# 1	"	5	5:50A	235	1.00	2.10	1.68	1.30	84	76	6:23A	10:35A	0.132	6.12	6:10A	0.87		
"	# 2	"	3	5:20A	265	0.94	2.04	1.40	1.00	"	"	6:12A	11:15A	0.40	3.35	6:22A	0.54		
"	# 3	"	4	5:20A	260	1.05	2.16	1.60	1.20	"	"	No Run-off							
"	# 4	"	7	5:50A	235	1.21	2.64	2.08	1.52	"	"	No Run-off							

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
DIVISION OF RESEARCH

MONTH January - December, 19 38
 SHEET 12 OF 16 SHEETS

RECORD OF SINGLE STORMS AND THEIR RUN-OFFS ON VARIOUS WATERSHEDS

 PROJECT Guthrie, Oklahoma

DATE		WATERSHED		RAINFALL				TEMPERATURE (degrees F.)			RUN-OFF				Silt Loss (tons per acre)	CONVERSION OF WATERSHED		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)			(16)	(17)
	Number	Area (acres)	Gage No.	Run-off (hour)	Duration (minutes)	Amount (inches)	8 minutes (inches per hour)	12 minutes (inches per hour)	30 minutes (inches per hour)	Maximum	Minimum	Incess (hour)	Flood (hour)	Amount (inches)	Maximum Rate (Cu. ft. sec.)	Time	Run-off (inches)	
9/12	# 5	As Above	4	5:20A	260	1.05	2.16	1.60	1.20	84	76	Trace of Run-off	6:10A 12:30P	0.26	2.65	6:25A	0.74	
"	# 6	"	5	5:50A	235	1.00	2.10	1.68	1.30	"	"	6:05A 12:58P	0.37B	4.11	6:24A	0.63		
"	# 7	"	5	5:50A	235	0.93	2.16	1.60	1.12	"	"	6:09A 9:19A	0.25	1.86	6:27A	0.68		
"	# 8	"	5	5:30A	235	1.04	2.16	1.84	1.36	"	"	7:13A 1:35P	0.32	0.74	7:35A	0.72		
"	# 9	"	8	5:30A	230	1.05	2.16	1.60	1.20	"	"	6:10A 1:00P	0.203	0.15	7:15A	0.85		
"	# 10	"	4	5:20A	260	1.05	2.16	1.60	1.20	"	"	No Run-off						
"	# 11	"	12	5:45A	240	1.24	2.10	2.28	1.60	"	"							
9/12	# 1	"	5	9:00P	45	0.07				84	76							
"	# 2	"	3	"	60	0.07				"	"							
"	# 3	"	4	"	45	0.07				"	"							
"	# 4	"	7	"	65	0.08				"	"							
"	# 5	"	4	"	45	0.07				"	"							
"	# 6	"	5	"	45	0.07				"	"							
"	# 7	"	5	"	45	0.07				"	"							
"	# 8	"	9	"	45	0.07				"	"							
"	# 9	"	8	"	45	0.07				"	"							
"	# 10	"	4	"	45	0.07				"	"							
"	# 11	"	12	"	45	0.08				"	"							
9/13	# 1	"	5	11:50A	80	0.58	3.36	1.60	1.12	87	65	12:01P 9:51P	0.336	13.34	12:21P	0.25		
"	# 2	"	3	11:50A	75	0.60	4.44	1.68	1.12	"	"	11:58A 1:08P	0.567	7.51	12:03P	0.04		
"	# 3	"	4	11:50A	75	0.73	4.32	2.04	1.32	"	"	No Run-off	0.43	0.46	12:30P	0.30		
"	# 4	"	7	11:55A	75	0.82	3.60	2.10	1.50	"	"							
"	# 5	"	4	11:50A	75	0.73	4.32	2.04	1.32	"	"	Trace of Run-off						
"	# 6	"	5	11:50A	80	0.58	3.36	1.60	1.12	"	"	11:58A 2:00A	0.514	4.11	12:09P	0.07		
"	# 7	"	5	11:50A	80	0.58	3.36	1.60	1.12	"	"	11:55A 9:58P	0.56	5.88	12:03P	0.02		
"	# 8	"	9	11:50A	80	0.53	3.36	1.60	1.12	"	"	12:01P 2:20P	0.494	2.32	12:15P	0.04		
"	# 9	"	8	11:50A	80	0.58	3.84	1.60	1.12	"	"	12:15P 8:52P	0.398	0.92	12:47P	0.19		
"	# 10	"	4	11:50A	75	0.73	4.32	2.04	1.32	"	"	11:55A 10:55P	0.699	0.76	12:02P	0.08		
"	# 11	"	12	11:55A	75	0.80	4.20	2.28	1.44	"	"	No Run-off						
9/13	# 1	"	5	4:00P	15	0.15				87	65							
"	# 2	"	3	3:55P	15	0.15				"	"							
"	# 3	"	4	4:00P	15	0.17	1.08	0.56	0.28	"	"							
"	# 4	"	7	4:00P	15	0.13				"	"							
"	# 5	"	4	4:00P	15	0.17				"	"							
"	# 6	"	5	4:00P	15	0.15				"	"							
"	# 7	"	5	4:00P	15	0.15				"	"							
"	# 8	"	9	4:00P	15	0.15				"	"							
"	# 9	"	8	3:55P	20	0.15				"	"							
"	# 10	"	4	4:00P	15	0.17				"	"							
"	# 11	"	12	4:00P	15	0.14				"	"							

MONTH January - December, 19 38
SHEET 13 OF 16 SHEETS

RECORD OF SINGLE STORMS AND THEIR RUN-OFFS ON VARIOUS WATERSHEDS

PROJECT Guthrie, Oklahoma

U. S. GOVERNMENT PRINTING OFFICE 8-12349

DATE	WATERBOD			RAINFALL							TEMPERATURES (degrees F.)		RUR-OFF				Range in Minus Runoff (inches)	Frt Low (tons per acre)	COUNTRIES OF WATERBOD
	Number	Area (acres)	Gage No.	Bases (hour)	Duration (minutes)	Amount (inches)	MAXIMUM INTENSITY			Minimum	Maximum	Bases (hour)	Feet (inches)	Amount (inches)	MAXIMUM RATE				
							4 minutes (inches per hour)	15 minutes (inches per hour)	30 minutes (inches per hour)						Cu. ft. sec.	Time			
1938	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	
10/10	# 1	As Above	5	8:20A	15	0.09					78	61							
"	# 2	"	3	"	30	0.02					"	"							
"	# 3	"	4	"	20	0.05					"	"							
"	# 4	"	7	"	20	0.05					"	"							
"	# 5	"	4	"	20	0.05					"	"							
"	# 6	"	5	"	15	0.09					"	"							
"	# 7	"	5	"	15	0.09					"	"							
"	# 8	"	9	"	25	0.09					"	"							
"	# 9	"	8	"	25	0.09					"	"							
"	# 10	"	4	"	20	0.05					"	"							
"	# 11	"	12	8:30A	20	0.02					"	"							
10/10	# 1	"	5	9:05P	25	0.06					78	61							
"	# 2	"	3	9:05P	15	0.06					"	"							
"	# 3	"	4	9:05P	20	0.06					"	"							
"	# 4	"	7	9:10P	25	0.05					"	"							
"	# 5	"	4	9:05P	20	0.06					"	"							
"	# 6	"	5	9:05P	25	0.06					"	"							
"	# 7	"	5	9:05P	25	0.06					"	"							
"	# 8	"	9	9:05P	35	0.06					"	"							
"	# 9	"	8	9:05P	30	0.05					"	"							
"	# 10	"	4	9:05P	20	0.06					"	"							
"	# 11	"	12	9:05P	10	0.03					"	"							
10/18	# 1	"	5	8:10P	70	0.22					87	52							
"	# 2	"	3	8:10P	65	0.18					"	"							
"	# 3	"	4	8:10P	80	0.17					"	"							
"	# 4	"	7	8:15P	75	0.16					"	"							
"	# 5	"	4	8:10P	80	0.17					"	"							
"	# 6	"	5	8:10P	70	0.22					"	"							
"	# 7	"	5	8:10P	70	0.22					"	"							
"	# 8	"	9	8:10P	65	0.18					"	"							
"	# 9	"	8	8:10P	70	0.27					"	"							
"	# 10	"	4	8:10P	80	0.17					"	"							
"	# 11	"	12	8:15P	65	0.30					"	"							
10/19	# 1	"	5	5:45P	195	0.23					61	36							
"	# 2	"	3	"	165	0.23					"	"							
"	# 3	"	4	"	170	0.23					"	"							
"	# 4	"	7	"	195	0.24					"	"							
"	# 5	"	4	"	170	0.23					"	"							
"	# 6	"	5	"	195	0.23					"	"							
"	# 7	"	5	"	195	0.23					"	"							
"	# 8	"	9	"	175	0.24					"	"							

SHEET 14 OF 16 SHEETS

RECORD OF SINGLE STORMS AND THEIR RUN-OFFS ON VARIOUS WATERSHEDS

Author: Oklahoma

U. S. GOVERNMENT PRINTING OFFICE: 1969

Date	WATERED			RAINFALL							TEMPERATURE (degrees F)		RSD-OFF				Rains. Minus Runoff (inches)	Brk. Loss (loss per acre)	COUNT OF WATERED
	Number	Area (acres)	Gage No.	Beas (hour)	Duration (minutes)	Amount (inches)	MAXIMUM INTENSITY			Minimum	Maximum	Beas (hour)	Rsd. (hour)	Amount (inches)	MAXIMUM RATE				
							5 minutes (inches per hour)	15 minutes (inches per hour)	30 minutes (inches per hour)						Cu. ft. sec.	Time			
1938	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
10/19	# 9	As Above	8	5:15P	165	0.24		0.36	0.16	0.16	61	36							
"	# 10	"	4	"	170	0.23					"	"							
"	# 11	"	12	"	185	0.24					"	"							
11/3	# 1	"	5	1:35A	375	1.10		0.81	0.18	0.36	56	38							
"	# 2	"	3	1:31A	130	1.14		0.72	0.56	0.10	"	"							
"	# 3	"	4	1:35A	125	1.12		0.81	0.18	0.38	"	"							
"	# 4	"	7	2:15A	100	1.15		0.81	0.56	0.38	"	"							
"	# 5	"	4	1:35A	125	1.12		0.81	0.18	0.38	"	"							
"	# 6	"	5	1:35A	375	1.10		0.81	0.18	0.36	"	"							
"	# 7	"	5	1:35A	375	1.10		0.81	0.18	0.36	"	"							
"	# 8	"	9	1:35A	145	1.14		0.96	0.56	0.10	"	"							
"	# 9	"	8	1:35A	125	1.12		0.72	0.56	0.10	"	"							
"	# 10	"	4	1:35A	125	1.12		0.81	0.18	0.38	"	"							
"	# 11	"	12	1:35A	130	1.10		0.50	0.10	0.36	"	"							
11/6-7	# 1	"	5	8:15A	317	0.60		0.60	0.14	0.36	38-43	27-27							
"	# 2	"	3	"	315	0.57		0.72	0.10	0.32	"	"							
"	# 3	"	4	"	330	0.61		0.81	0.18	0.36	"	"							
"	# 4	"	7	"	320	0.87		1.20	0.18	0.09	"	"							
"	# 5	"	4	"	330	0.61		0.81	0.18	0.36	"	"							
"	# 6	"	5	"	317	0.60		0.60	0.14	0.36	"	"							
"	# 7	"	5	"	317	0.60		0.60	0.14	0.36	"	"							
"	# 8	"	9	"	315	0.74		0.60	0.14	0.38	"	"							
"	# 9	"	8	"	330	0.67		0.72	0.18	0.10	"	"							
"	# 10	"	4	"	330	0.61		0.81	0.18	0.36	"	"							
"	# 11	"	12	"	320	0.55		1.80	0.72	0.36	"	"							
11/12	# 1	"	5	9:25P	65	0.20					79	34							
"	# 2	"	3	"	60	0.21		0.18	0.24	0.20	"	"							
"	# 3	"	4	"	65	0.19		0.18	0.28	0.22	"	"							
"	# 4	"	7	"	40	0.23					"	"							
"	# 5	"	4	"	65	0.19					"	"							
"	# 6	"	5	"	65	0.20					"	"							
"	# 7	"	5	"	65	0.20					"	"							
"	# 8	"	9	"	65	0.27		0.96	0.32	0.24	"	"							
"	# 9	"	8	"	65	0.21					"	"							
"	# 10	"	4	"	65	0.19		0.18	0.28	0.22	"	"							
"	# 11	"	12	9:15P	45	0.20		0.81	0.18	0.28	"	"							
11/18	# 1	"	5	8:00A		0.01					51	28							
"	# 2	"	3	8:30A	30	0.01					"	"							
"	# 3	"	4	8:00A	10	0.01					"	"							
"	# 4	"	7	8:00A		0.02					"	"							

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
DIVISION OF RESEARCH

MONTH January - December, 19 38
SHEET 15 OF 16 SHEETS

RECORD OF SINGLE STORMS AND THEIR RUN-OFFS ON VARIOUS WATERSHEDS

Project Orthrie, Oklahoma

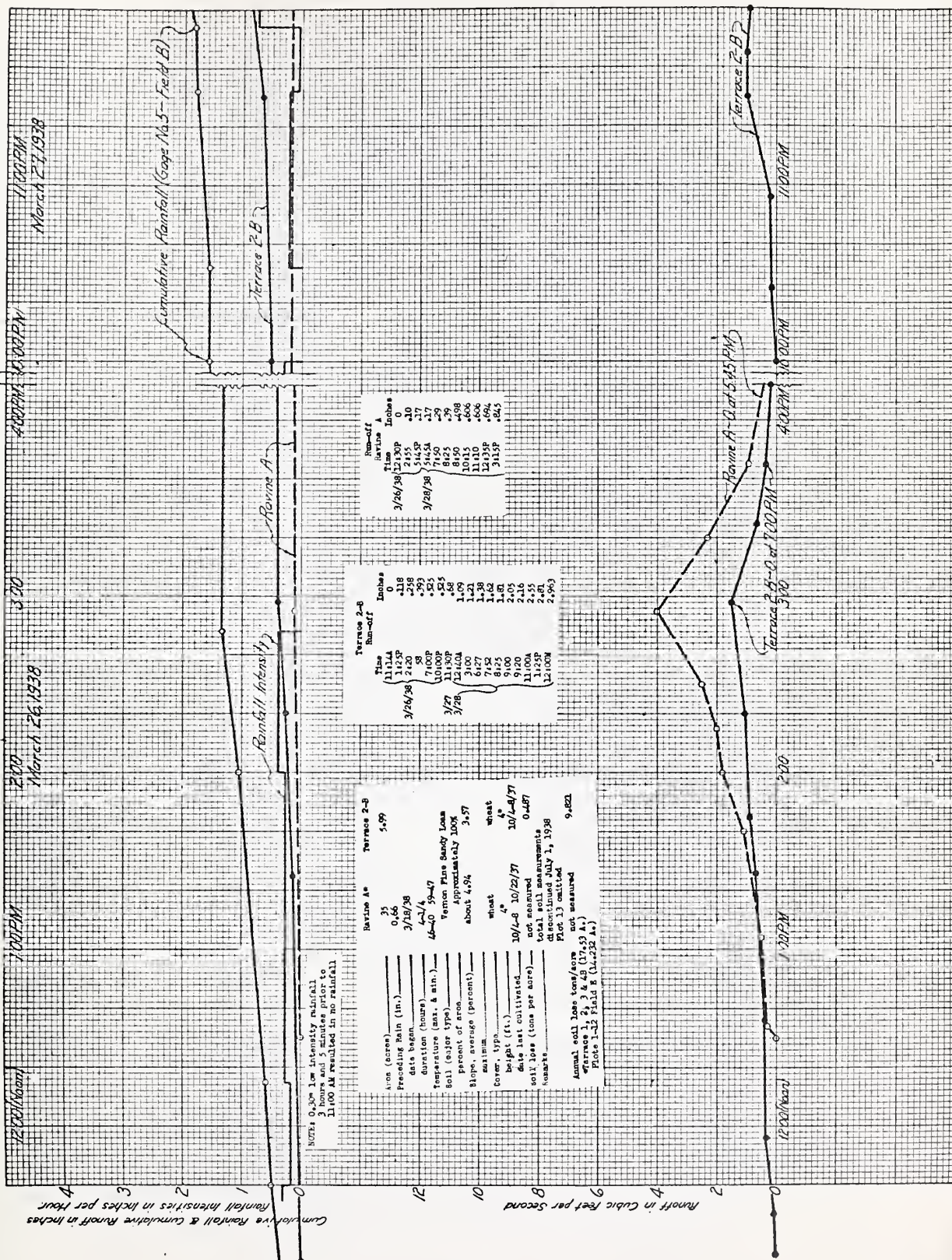
DATE	WATERSHED		RAINFALL						TEMPERATURE (degrees F.)		RUN-OFF				RAINFALL MOVS (inches)	SRT LOSS (tons per acre)	CONTOURS OF WATERSHED
	Number	Area (acres)	Obs No.	Began (hour)	Duration (minutes)	Amount (inches)	MAXIMUM INTENSITY			Minimum	Maximum	Began (hour)	Ended (hour)	Amount (inches)			
							5 minutes (inches per hour)	15 minutes (inches per hour)	30 minutes (inches per hour)						Cu. ft. sec.	Time	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
1938	# 5	As Above	4	8:00A	10	0.01				51	28						
	# 6	"	5	"	"	0.01				"	"						
	# 7	"	5	"	"	0.01				"	"						
	# 8	"	9	"	"	0.01				"	"						
	# 9	"	8	"	"	0.01				"	"						
	# 10	"	4	"	10	0.01				"	"						
	# 11	"	12	"	"	0.02				"	"						
	# 1	"	5	2:00P	Snow	0.01				41	17						
	# 2	"	3	"	"	0.01				"	"						
	# 3	"	4	"	"	0.01				"	"						
	# 4	"	7	"	"	0.01				"	"						
12/13	# 5	"	4	"	"	0.01				"	"						
	# 6	"	5	"	"	0.01				"	"						
	# 7	"	5	"	"	0.01				"	"						
	# 8	"	9	"	"	0.01				"	"						
	# 9	"	8	"	"	0.01				"	"						
	# 10	"	4	"	"	0.01				"	"						
	# 11	"	12	"	"	0.01				"	"						
	# 1	"	5	6:35A	30	0.05				59	24						
	# 2	"	3	"	25	0.04				"	"						
	# 3	"	4	6:35A	20	0.05				"	"						
	# 4	"	7	6:30A	30	0.06				"	"						
12/16	# 5	"	4	6:35A	20	0.05				"	"						
	# 6	"	5	"	30	0.05				"	"						
	# 7	"	5	"	30	0.05				"	"						
	# 8	"	9	"	10	0.03				"	"						
	# 9	"	8	"	25	0.04				"	"						
	# 10	"	4	"	20	0.05				"	"						
	# 11	"	12	"	25	0.05				"	"						
	# 1	"	5	2:00P	Snow	0.05				41	23						
	# 2	"	3	"	and Sleet	0.05				"	"						
	# 3	"	4	"	"	0.05				"	"						
	12/20	# 4	"	7	"	"	0.09				"	"					
# 5		"	4	"	"	0.05				"	"						
# 6		"	5	"	"	0.05				"	"						
# 7		"	5	"	"	0.05				"	"						
# 8		"	9	"	"	0.06				"	"						
# 9		"	8	"	"	0.07				"	"						
# 10		"	4	"	"	0.05				"	"						
# 11		"	12	"	"	0.06				"	"						
# 1		"	5	6:35A	30	0.05				59	24						
# 2		"	3	"	25	0.04				"	"						
# 3		"	4	6:35A	20	0.05				"	"						
# 4	"	7	6:30A	30	0.06				"	"							

PROJECT Guthrie, Oklahoma

SHEET 16 OF 16 SHEETS

RECORD OF SINGLE STORMS AND THEIR RUN-OFFS ON VARIOUS WATERSHEDS

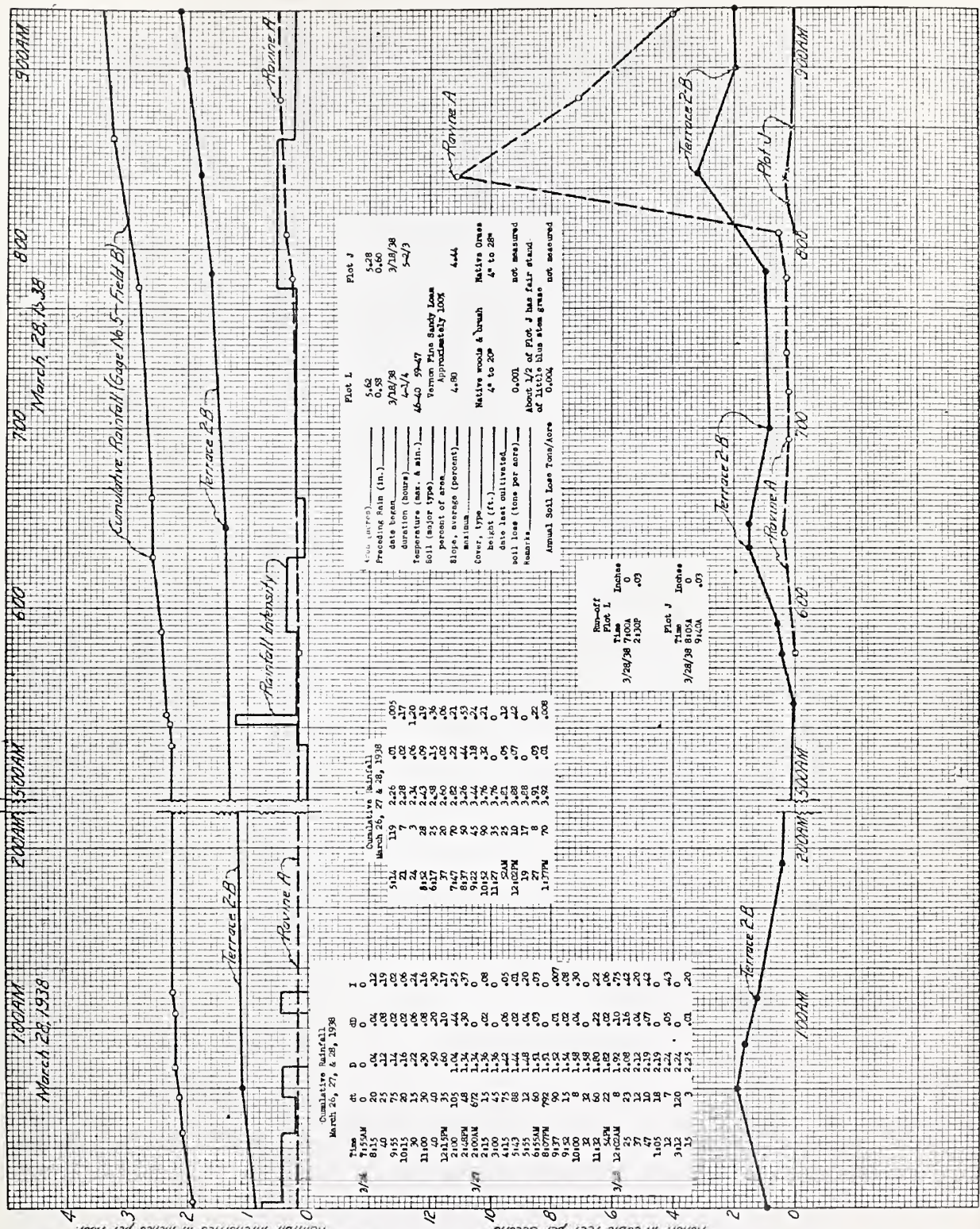
DATE	WATERED		RAINFALL					TEMPERATURE (degrees F)		WIND-OFF				HURRICANE MINUS (inches)	WIND LOW (miles per hour)	OBSERVATIONS OF WATERED	
	Number	Area (acres)	Gage No.	Rises (feet)	Duration (minutes)	Amount (inches)	MAXIMUM INTEREST			Mean (hour)	Existed (hour)	Amount (inches)	MAXIMUM RATE				
							5 minutes (inches per hour)	15 minutes (inches per hour)	30 minutes (inches per hour)				Per sec.				Time
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
1938																	
12/22	# 1	As Above	5	3:15A	380	0.16				47	31						
"	# 2	"	3	"	405	0.17				"	"						
"	# 3	"	1	"	420	0.18				"	"						
"	# 4	"	7	3:15A	390	0.20				"	"						
"	# 5	"	4	3:15A	420	0.18				"	"						
"	# 6	"	5	"	380	0.16				"	"						
"	# 7	"	5	"	380	0.16				"	"						
"	# 8	"	9	"	440	0.16				"	"						
"	# 9	"	8	"	420	0.19				"	"						
"	# 10	"	4	"	420	0.18				"	"						
"	# 11	"	12	"	405	0.20				"	"						
12/25	# 1	"	5			Trace				54	40						
"	# 2	"	3			"				"	"						
"	# 3	"	4			"				"	"						
"	# 4	"	7			"				"	"						
"	# 5	"	4			"				"	"						
"	# 6	"	5			"				"	"						
"	# 7	"	5			"				"	"						
"	# 8	"	9			"				"	"						
"	# 9	"	8			"				"	"						
"	# 10	"	4			"				"	"						
"	# 11	"	12			"				"	"						



NOTE: 0.30" low intensity rainfall
3 hours and 5 minutes prior to
11:00 AM resulted in no rainfall

Barline 14	Barline 24	Barline 24
35	35	5.99
0.68	0.68	
3/12/78	3/12/78	
4-4/4	4-4/4	
46-40 59-47	46-40 59-47	
Yemen Fun Sandy Loam	Yemen Fun Sandy Loam	
Approximately 100%	Approximately 100%	
about 4.5%	about 4.5%	3.57
what	what	
4	4	
10/4-8 10/12/77	10/4-8 10/12/77	10/4-77
not measured	not measured	0.467
total soil measurements	total soil measurements	
December 1, 1978	December 1, 1978	
13 collected	13 collected	
not measured	not measured	9.822

Annual soil loss tons/acre not
exceed 1, 2, 3 & 43 (17.53 A.)
Plot 1-12 Field B (14,232 A.)

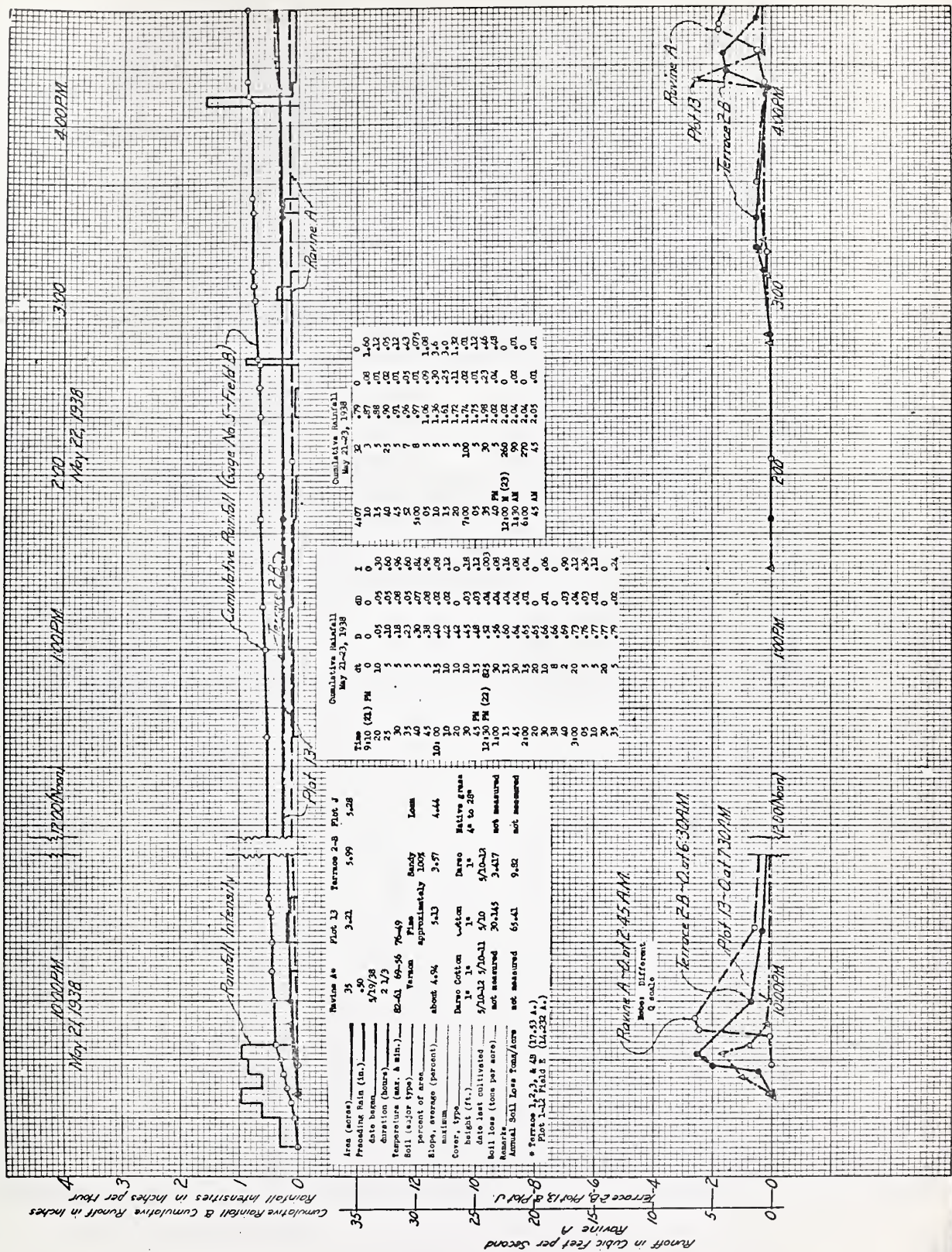


Cumulative Rainfall & Cumulative Runoff in Inches

Plot L	Plot J
5.62	5.28
0.58	0.40
3/18/38	3/18/38
4-1/4	5-2/3
46-40 59-47	
Vermin Pins Sandy Loam	
Soil (major type)	
81gpr. average (percent)	
4.80	4.44
Native weeds & brush	Native Grass
4" to 20"	4" to 20"
0.001	not measured
soil loss (tons per acre)	About 1/2 of Plot J has fair stand
	of little blue stem grass
	not measured
Annual Soil Loss Tons/Acre	
0.004	

Run-off	Plot L	Plot J
Time	Time	Time
3/28/38 7:00A	3/28/38 7:00A	3/28/38 8:05A
2:10P	2:10P	9:15A
Inches	Inches	Inches
.03	.03	.03

Cumulative Rainfall				
March 26, 27, & 28, 1938				
Time	in	in	in	in
7:00 AM	0.00	0.04	0.12	0.05
8:15 AM	20	0.1	0.08	0.27
9:30 AM	25	0.2	0.04	0.16
10:45 AM	75	0.4	0.02	0.19
12:00 PM	101.5	20	0.02	0.36
1:15 PM	30	0.2	0.06	0.36
2:30 PM	30	0.2	0.08	0.36
3:45 PM	11	0.0	0.04	0.36
5:00 PM	40	0.0	0.30	0.06
6:15 PM	60	0.0	0.17	0.02
7:30 PM	121.5 PM	35	0.60	0.21
8:45 PM	2:00	1.04	0.44	0.06
10:00 PM	2:00 PM	1.34	0.30	0.21
11:15 PM	2:15	1.36	0.08	0.36
12:30 AM	2:30	1.36	0.02	0.36
1:45 AM	3:00	1.36	0.0	0.36
3:00 AM	4:15	1.36	0.0	0.36
4:30 AM	5:30	1.36	0.0	0.36
6:00 AM	6:45	1.36	0.0	0.36
7:15 AM	7:45	1.36	0.0	0.36
8:30 AM	8:45	1.36	0.0	0.36
9:45 AM	9:45	1.36	0.0	0.36
11:00 AM	10:00	1.36	0.0	0.36
12:15 PM	11:15	1.36	0.0	0.36
1:30 PM	12:00	1.36	0.0	0.36
2:45 PM	1:00	1.36	0.0	0.36
4:00 PM	2:00	1.36	0.0	0.36
5:15 PM	3:00	1.36	0.0	0.36
6:30 PM	4:00	1.36	0.0	0.36
7:45 PM	5:00	1.36	0.0	0.36
9:00 PM	6:00	1.36	0.0	0.36
10:15 PM	7:00	1.36	0.0	0.36
11:30 PM	8:00	1.36	0.0	0.36
12:45 AM	9:00	1.36	0.0	0.36
2:00 AM	10:00	1.36	0.0	0.36
3:15 AM	11:00	1.36	0.0	0.36
4:30 AM	12:00	1.36	0.0	0.36
5:45 AM	1:00	1.36	0.0	0.36
7:00 AM	2:00	1.36	0.0	0.36
8:15 AM	3:00	1.36	0.0	0.36
9:30 AM	4:00	1.36	0.0	0.36
10:45 AM	5:00	1.36	0.0	0.36
12:00 PM	6:00	1.36	0.0	0.36
1:15 PM	7:00	1.36	0.0	0.36
2:30 PM	8:00	1.36	0.0	0.36
3:45 PM	9:00	1.36	0.0	0.36
5:00 PM	10:00	1.36	0.0	0.36
6:15 PM	11:00	1.36	0.0	0.36
7:30 PM	12:00	1.36	0.0	0.36
8:45 PM	1:00	1.36	0.0	0.36
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11:15 PM	3:00	1.36	0.0	0.36
12:30 AM	4:00	1.36	0.0	0.36
1:45 AM	5:00	1.36	0.0	0.36
3:00 AM	6:00	1.36	0.0	0.36
4:15 AM	7:00	1.36	0.0	0.36
5:30 AM	8:00	1.36	0.0	0.36
6:45 AM	9:00	1.36	0.0	0.36
8:00 AM	10:00	1.36	0.0	0.36
9:15 AM	11:00	1.36	0.0	0.36
10:30 AM	12:00	1.36	0.0	0.36
11:45 AM	1:00	1.36	0.0	0.36
1:00 PM	2:00	1.36	0.0	0.36
2:15 PM	3:00	1.36	0.0	0.36
3:30 PM	4:00	1.36	0.0	0.36
4:45 PM	5:00	1.36	0.0	0.36
6:00 PM	6:00	1.36	0.0	0.36
7:15 PM	7:00	1.36	0.0	0.36
8:30 PM	8:00	1.36	0.0	0.36
9:45 PM	9:00	1.36	0.0	0.36
11:00 PM	10:00	1.36	0.0	0.36
12:15 AM	11:00	1.36	0.0	0.36
1:30 AM	12:00	1.36	0.0	0.36
2:45 AM	1:00	1.36	0.0	0.36
4:00 AM	2:00	1.36	0.0	0.36
5:15 AM	3:00	1.36	0.0	0.36
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12:00 AM	6:00	1.36	0.0	0.36
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11:15 AM	3:00	1.36	0.0	0.36
12:30 PM	4:00	1.36	0.0	0.36
1:45 PM	5:00	1.36	0.0	0.36
3:00 PM	6:00	1.36	0.0	0.36
4:15 PM	7:00	1.36	0.0	0.36
5:30 PM	8:00	1.36	0.0	0.36
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4:45 AM	5:00	1.36	0.0	0.36
6:00 AM	6:00	1.36	0.0	0.36
7:15 AM	7:00	1.36	0.0	0.36
8:30 AM	8:00	1.36	0.0	0.36
9:45 AM	9:00	1.36	0.0	0.36
11:00 AM	10:00	1.36	0.0	0.36
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9:15 PM	11:00	1.36	0.0	0.36
10:30 PM	12:00	1.36	0.0	0.36
11:45 PM	1:00	1.36	0.0	0.36
1:00 AM	2:00	1.36	0.0	0.36
2:15 AM	3:00	1.36	0.0	0.36
3:30 AM	4:00	1.36	0.0	0.36
4:45 AM	5:00	1.36	0.0	0.36
6:00 AM	6:00	1.36	0.0	0.36
7:15 AM	7:00	1.36	0.0	0.36
8:30 AM	8:00	1.36	0.0	0.36
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11:00 AM	10:00	1.36	0.0	0.36
12:15 PM	11:00	1.36	0.0	0.36
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2:45 PM	1:00	1.36	0.0	0.36
4:00 PM	2:00	1.36	0.0	0.36
5:15 PM	3:00	1.36	0.0	0.36
6:30 PM	4:00	1.36	0.0	0.36
7:45 PM	5:00	1.36	0.0	0.36
9:00 PM	6:00	1.36	0.0	0.36
10:15 PM	7:00	1.36	0.0	0.36
11:30 PM	8:00	1.36	0.0	0.36
12:45 AM	9:00	1.36	0.0	0.36
2:00 AM	10:00	1.36	0.0	0.36
3:15 AM	11:00	1.36	0.0	0.36
4:30 AM	12:00	1.36	0.0	0.36
5:45 AM	1:00	1.36	0.0	0.36
7:00 AM	2:00	1.36	0.0	0.36
8:15 AM	3:00	1.36	0.0	0.36
9:30 AM	4:00	1.36	0.0	0.36
10:45 AM	5:00	1.36	0.0	0.36
12:00 PM	6:00	1.36	0.0	0.36
1:15 PM	7:00	1.36	0.0	0.36
2:30 PM	8:00	1.36	0.0	0.36
3:45 PM	9:00	1.36	0.0	0.36
5:00 PM	10:00	1.36	0.0	0.36
6:15 PM	11:00	1.36	0.0	0.36
7:30 PM	12:00	1.36	0.0	0.36
8:45 PM	1:00	1.36	0.0	0.36
10:00 PM	2:00	1.36	0.0	0.36
11:15 PM	3:00	1.36	0.0	0.36
12:30 AM	4:00	1.36	0.0	0.36
1:45 AM	5:00	1.36	0.0	0.36
3:00 AM	6:00	1.36	0.0	0.36
4:15 AM	7:00	1.36	0.0	0.36
5:30 AM	8:00	1.36	0.0</	



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